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## RAIN: Journal of Appropriate Technology

ECO-NET

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# RAIN

Journal of Appropriate Technology

JUNE 1977

VOLUME III, NO. 8

ONE DOLLAR



—Tom Bender

**INSIDE:** Composting Privy Plans  
Passive Solar "Rules of Thumb"  
Androgyny  
Reports from D.C.

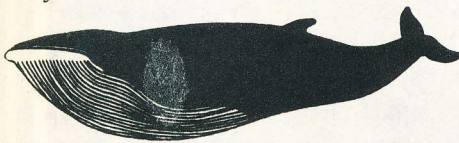
# RAIN *access*

## RESOURCES

*Maine Natural Resource Organization Directory*, Richard Harvey, editor, 36 pp., 1977, free from:

Resource Planning Division  
Maine State Planning Office  
184 State St.  
Augusta, ME 04330

A comprehensive, up-to-date, 36-pg. booklet listing environmental agencies and groups with annotated details on what they do; useful to those seeking environmental info in or about Maine. —LJ



*Maine Comprehensive Land Use Plan*, 100 pp., 1977, \$2 each (free to persons owning property in the area under LURC jurisdiction) from:

Land Use Regulation Commission  
State House  
Augusta, ME 04333

The historical background of land development in Maine is described. The plan combines the basic policies guiding land use in 407 unorganized townships, 56 plantations, covering 10.5 million acres. Regional and state land planners and citizens groups will find this interesting and useful. —LJ

*Resource Recovery: Truth or Consequences*, Marchant Wentworth, 1977, \$3.50 from:

Environmental Action Foundation  
724 Dupont Circle Building  
Washington, DC 20036

If your community is even remotely considering one of the guzzling solid waste resource recovery monsters, you should get this little fact-filled book. It pulls together all the arguments and information showing how home source separation combined with local collection (or even drop-off centers) is a more energy-efficient, cheaper, saner way to go. Communities that have gotten trapped into paying millions for high-tech systems are also contractually

committed to supplying a certain amount of wastes so the system can operate efficiently. In New Orleans, for instance, the City has to pay \$1 to the facility for every dollar's worth of recyclable material below the quota! Hardly the much-needed incentives to reduce our waste of precious resources —more like big industry's newest scam. —LdeM

*Ecology and the Politics of Scarcity: Prologue to a Political Theory of the Steady State*, William Ophuls, 303 pp., 1977, \$6.95 paperback from:  
W.B. Freeman & Co.  
660 Market St.  
San Francisco, CA 94104

This is the best book I've read in a very long time; since Howard Odum's *Environment, Power & Society* in 1971 got many of us ready for Herman Daly and Nicholas Georgescu-Roegen. In that time we've had the ecology and economics of the coming steady-state clearly laid out for us. In this comprehensive work Ophuls has done a well-crafted, state-of-thought reprise and summary as a basis for his next book on the politics of that steady-state society. This is an important 300 pages. Read it. I stayed up all night doing just that after mistakenly assuming that samples here and there would be enough.

Anyone reading these words knows those of us here, and thousands of known and unknown friends we've told you about, are already living *as if* the transition to the steady state has already passed, or are making the transition right now, or preparing themselves for that transition. When you see them, tell them about this book. We humans are rather slow learners who need the fast feedback EPS provides. The perspectives it lays out will ease our mutual path. Let's go. —LJ

## HEALTH

*Pregnancy Over 35*, Carole Spearin McCauley, \$7.95, from:  
E.P. Dutton  
201 Park Ave. S.  
New York, NY 10003

Allows prospective "elderly" mothers to determine whether theirs might be

a high-risk pregnancy and if so what to do about it.

The Big Question is: What are my chances of having a Down's syndrome (incorrectly called Mongoloid) baby. Here are the figures:

20-year-old mothers	.04%
35-39-year-old mothers	1.60%
40-44-year-old mothers	2.60%

A new laboratory procedure can determine whether a fetus has Down's syndrome in the fourth month of pregnancy. The patients can then decide whether or not to keep the baby.

A useful book for anyone considering pregnancy. Essential reading for women thinking of getting pregnant after 35. —Tom Ferguson



*The Herb Book*, John Lust, 1974, \$2.50 from:  
Bantam Books  
666 Fifth Ave.  
New York, NY 10019

I am always on the lookout for books that can help me learn about medicinal uses for herbs, and this pocket edition by a naturopathic doctor looks like a good one. Descriptions of the plant are clearly written (a good series of glossaries helps define both medical and botanical terms) with line drawings. There are both exact dosages for most things and clear directions for general treatments, like making a salve or a tincture. So many books say to use comfrey for cramps but give you no idea how much or how little (a teaspoon or a cup?). Best of all, there are several cross-referenced listings—by herb (aloe vera), problem (burn), and effect (emolient). I think this book will get thumbed through often.

RAIN is a monthly information access journal and reference service for people developing more satisfying patterns that increase local self-reliance and press less heavily on our limited resources.

We try to give access to:

- \* Solid *technical support* for evaluating and implementing new ideas.
- \* *Ecological and philosophical perceptions* that can help create more satisfying options for living, working and playing.
- \* *Up-to-date information* on people, events and publications.

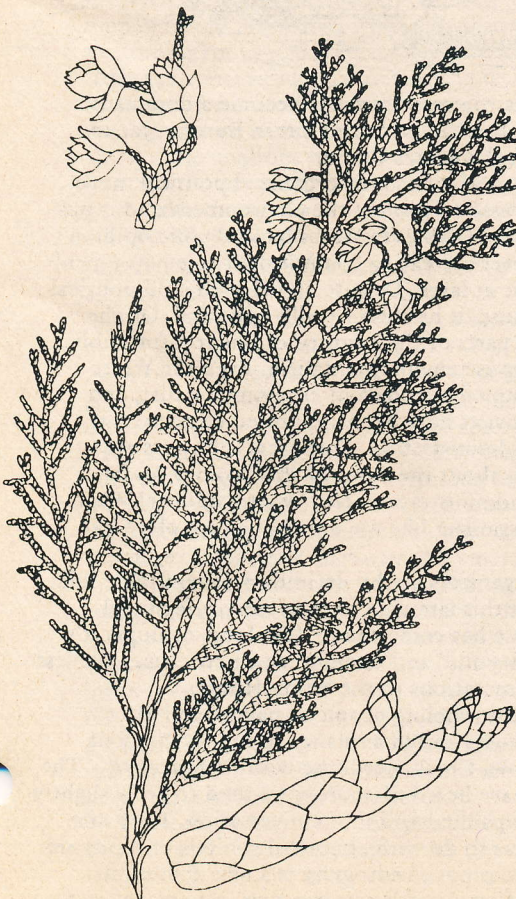
And while we're on the subject, here are two new books for budding Pacific Northwest naturalists. Both are good places to get started, particularly if you're new to the area:

**Profiles of Northwest Plants**, Peggy Robinson, 1977, \$2.50 from her at:  
1020 S.W. Dolph Ct.  
Portland, OR 97219

Food uses, medicinal uses and legends for plants in the Portland area.

**Western Tree Book**, George Palmer and Martha Stucky, 1977, \$5.95 from:  
Victoria House  
2218 N.E. 8th Ave.  
Portland, OR 97212

Especially nice for its comparisons—"All firs have these characteristics in common," "how to distinguish between the wild cherries." Tom turned to the cedars and began to dream. —LdeM



**DO IT NOW Foundation**  
P.O. Box 5115  
Phoenix, AZ 85010

Cheap, high-quality publications on drugs and drug use—alcohol, grass, downers, uppers, smack, over-the-counter, prescription, etc. A rare blend of street-wise savvy and unhysterical but accurate warnings of medical hazards.

Director Vic Pawlak writes, "We can't send everything free to everybody, but we can promise that readers writing in will receive basic information on whatever chemical area is their prime interest."

Catalog and sample pamphlets free from above address. —Tom Ferguson

## ENERGY SAVING

**Industrial Energy Conservation: A Handbook for Engineers and Managers**, D.A. Reay, 370 pp., 187 illustrations, 1977, \$12.50 flexi-cover from:

Pergamon Press  
Maxwell House  
Fairview Park  
Elmsford, NY 10523

As you might expect, given Great Britain's more desperate energy situation, serious attention to conservation would soon be reflected in excellent, clearly-written books. Understandable diagrams and graphs amplify a text chock full of money-saving hints for an entire range of energy-intensive industries: iron & steel, aluminum, chemical, oil, pulp & paper, glass, food processing, textiles. One chapter emphasizes good house-keeping of boilers, dryers and other equipment. Another covers energy recovery. Case histories and examples of capital cost and return on investment with various techniques and new processes abound. References, appendices of British & U.S. organizations and equipment suppliers, and a very useful, index complete this work. If anyone has seen a nitty-gritty U.S. version, please let us know. Highly recommended to plant engineers and corporate energy managers. —LJ

**FEA Public Schools Energy Audit Service**, \$30 per elementary school, \$50 per junior or senior high, contact your nearest Federal Energy Administration office. A two-phase audit includes: 1) a summary of your energy-saving potential and a series of checklists to use in your operation of the school, and 2) a cost-benefit analysis of energy conservation options. —LJ

**Colorado Energy Research Institute Energy News Notes**, available from:

**CERI**  
P.O. Box 366  
Golden, CO 80401

As an energy center, CERI can answer questions and direct Coloradans to local architects, engineers, researchers and energy policymakers. It also publishes a variety of reports and analyses on future energy alternatives, energy conservation and net energy in the Colorado context. Write for a sample newsletter and publications pricelist. —LJ

"How to Remodel a Home for Self-Sufficiency," by Joel M. Skousen, in *Inflation Survival Letter*, vol. 4., no. 9, May 4, 1977, \$2 (single copy), \$48/yr. for 24 issues, from:

*Inflation Survival Letter*  
6737 Annapolis Rd.  
P.O. Box 2599  
Landover Hills, MD 20784

We'll review Mr. Skousen's book, from which their excerpt is taken, in a future issue. Meanwhile, this is a good intro to ISL, which is full of financial survival hints and is now including more perspectives on the relation of energy to inflation and human survival. —LJ

**Greenhouse Energy Conservation**, contact:

W. Bauerle and T. Short  
Ohio State University Cooperative  
Extension Service  
Ohio Agric. R&D Center  
2120 Fyffe Rd.  
Columbus, OH 43210

An insulating plastic covering over a conventional glass greenhouse cut total heat use by 57% during the four coldest months of winter '75-'76. A commercially available two-layer cover is inflated with air after attachment to the outside surface of the greenhouse. —LJ

# Goodbye Ecology, Hello Androgyny!

NOTES ON A RITE OF PASSAGE  
—Byron Kennard

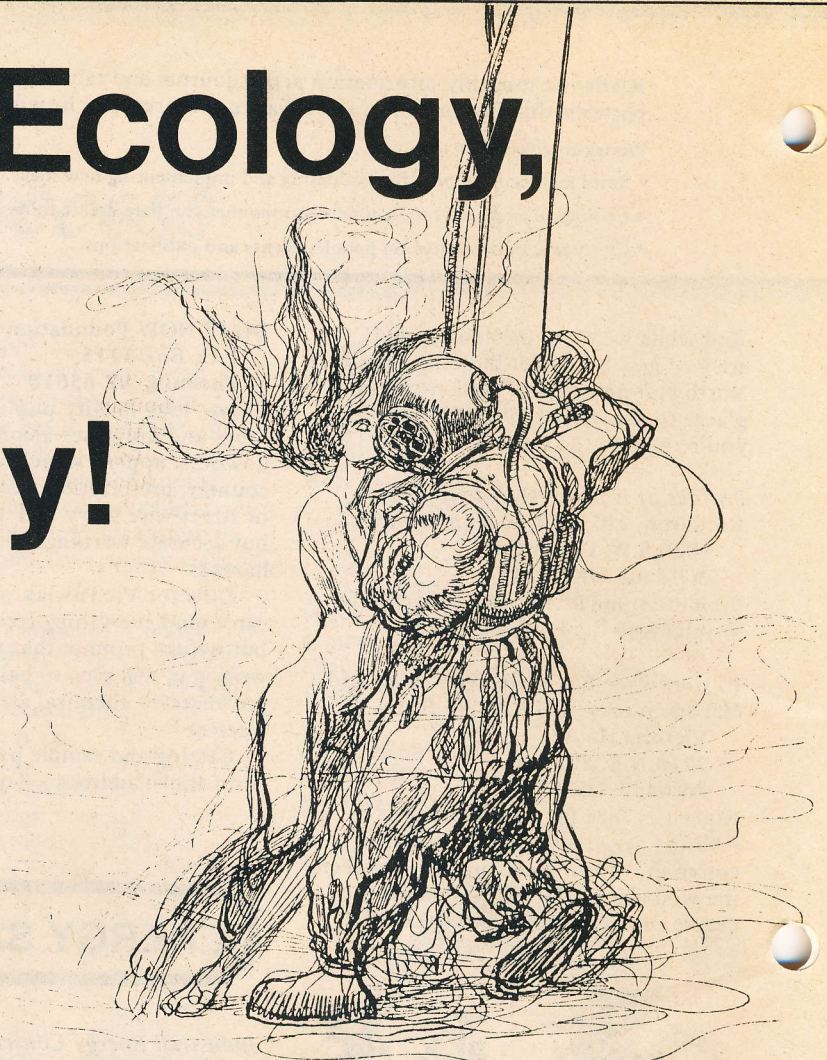
*Byron is a board member of Environmentalists for Full Employment and director of the National Council for the Public Assessment of Technology.*

Pardon me for changing my paradigms in public, but my karma seems determined to drag me, kicking and screaming, through yet another painful expansion of my consciousness and I fear that I cannot keep the affair altogether private.

It all began 12 years ago when I was first introduced to the idea of ecology. It was love at first sight. Until then, I had been knocking about the planet as aimlessly as the next guy, but now I had a coherent vision and conceptual framework for my ideas and my politics.

In those days, few people had heard of ecology. But something portentous was then in the air and soon small voluntary networks sprang up almost everywhere to promote understanding of ecology. We began virtually on a one-to-one basis, cornering people at parties and after meetings and on buses and in airplanes ("Say, have you heard this Greek word 'ecology' which means the study of the home?"). Before long the very definition of "ecology" was lifted out of a dusty niche in a remote corner of biological science where it had languished for years and soon the mere word was converted into powerful and compelling new imagery for planetary transformation.

Today, though the outcome of the struggle to preserve nature is still very much in doubt, almost any schoolchild can tell you what ecology means. The essential prelude to global ecological protection—a global change in consciousness—has



been achieved. Environmentalism has become a dominant theme not only in the United States but in Europe, Japan, Australia and even the Soviet Union.

In this country, a vast and well-organized political movement has been formed to protect the environment and it possesses one of the best lobbies in Washington. Public opinion polls indicate an ever-increasing commitment to environmentalism by the public at large. Despite an oft-predicted political backlash to the cause, it has never really appeared. On the contrary, in some parts of the country candidates for public office *dare not* oppose environmentalism. Even the White House is now occupied by a devout environmentalist, and environmental activists have been appointed to many top spots in the new administration. Corporate lobbyists are already squawking about the clout of the Ecology Mafia inside the Carter administration. Hey, wait a minute! What is a community organizer like me doing in a nice place like this?

Community organizers are by definition disreputable folk, and I am loathe at this late date to raise my professional standards. The time has come to say, "So long, ecology, it's been nice to know you," and to embrace a new cause, one less likely to win me invitations to the White House.

Today, I am buttonholing people at parties and after meetings and on buses and in airplanes to tell them about another little-known Greek word; the word is *androgyny*. The few people who have heard of androgyny tend to grow slightly agitated if one drops the word into conversation. They mistakenly think it has to do with abnormal genitals or kinky sex practices, but it does not. Androgyny is a new theory of sexuality which offers us all a new measure of personal and

political liberation. Androgyny may be the most radical idea to come along in our time.

Just as citizen activists infused the word "ecology" with extraordinary new significance, so the word "androgyny" is now being infused with momentous importance by small voluntary networks. To comprehend androgyny, it is first necessary to understand that it means neither hermaphroditism, nor homosexuality, nor bisexuality. People can bed down in whatever combinations they like so far as I am concerned, but their sexual preferences have nothing to do with androgyny simply because *gender* has nothing to do with androgyny.

Androgyny is the expression of the ideal whole human personality; gender is a grossly inadequate expression of this wholeness. Yet we have always treated gender as if it were the essential and overriding determinant of personality. Boys were boys and girls were girls and that was that. This is like letting money serve as society's only standard of value. Who would want a world where all beauty was banished except that with a pricetag on it? Who wants a world where all the richness of human personality must be crammed into two little boxes, one marked "feminine" and one marked "masculine"?

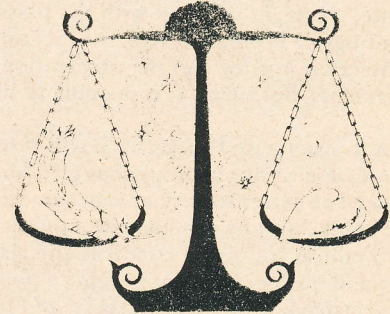
The idea of androgyny *transcends and exists to transcend* all such gender-trapped considerations. It belongs neither to men nor women; it belongs to human beings. Androgyny does not mean that women should repeat the errors of the past; the idea is not that men should now submit to the rule of women. Androgyny can get us out of the vicious cycle wherein one must either be a "winner" or a "loser." It can help us all climb onto the common ground of true equality between the sexes. It points the way out of the bitter war which women and men have been waging for countless generations.

Like all truly liberating ideas, androgyny is fundamentally simple, yet hard to define. It resurrects the ancient myth that human beings are blessed with a dual nature, the all-in-one, the androgynous ideal. Psychologically, this notion derives from the contrasting qualities within us which make it possible to achieve balance and integration within the human personality. For reasons shrouded in the mists of time, culture has divided these qualities into two sets and labelled them "masculine" and "feminine." Today, in a dangerously over-populated world, this division is cruel, needless and inappropriate, but still we cling to it. Men are forbidden access to their tender side and women are forbidden access to their aggressive side; and woe to those who dare cross over!

But what, it is fair to ask, is a community organizer doing in the androgyny game? What are the political and social dimensions of a new understanding of sexuality? For years my primary interest has been facilitating social change. While I do not claim paternity of any fundamentally new ideas, I do claim association with the very early stages of several citizen-initiated social movements, beginning in the early sixties with the first real federal effort to combat water pollution. Among the other causes I have helped to nurture are the movement for clean air, the anti-highway movement, the public transportation movement, the anti-nuclear movement, the pro-solar energy movement and, most recently, the appropriate technology/"Small Is Beautiful" movement. I was present at the creation of the movements for public interest law, public interest economics and public interest science. In addition, I rendered loyal service as a foot-soldier in other mass social expressions of recent times: the civil rights movement, the anti-war movement and the feminist movement. I daresay that I have seen a lot of social movements.

These movements and the great historic movements of the nation's past—the abolitionists, the populists, the progressives, the suffragettes, the labor unions—all pursued the vision of a better society, one more just and humane. This self-same dream

down through the ages has inspired people to strive to build a better world. Great thinkers, leaders and artists have provided thrilling glimpses of what the species could be if only our better natures were allowed to govern human affairs. But even ordinary people, if you ask them, can describe the outlines of a better society. They carry around the vision inside them; we all do.



A funny thing happens, however, on the way to securing this vision. We fall laughably, tragically short. Again and again. We never even come close. Why?

Luckily for me, I stumbled across androgyny as I was about to publicly swear allegiance to perpetual misanthropy. But contemplating androgyny allowed me to revise my perverse judgment of humanity. In simple terms, here is where I have emerged: Our shared vision of a better society is and must be rooted in the basic value of *cooperation*. But cooperation is neglected and discounted in the prevailing social system which is rooted instead in the basic value of *competition*. Now cooperation and competition are both necessary and desirable features of human societies as they are of ecological systems: cooperation, to provide stability; competition, to make room for the new. There must be a balance between the two: too much cooperation, stagnation; too much competition, chaos. The trouble with our society is that it overrewards competition (e.g. new technologies) and under-rewards cooperation (e.g. democratic collaboration). Why?

The fundamental reason, it seems to me, why social alternatives rooted in cooperation are neglected is because they evolve within the side of human nature we call "feminine," a side of ourselves we have been taught to discount or even despise. Let me explain this a little further in terms of what I call a "hard" view of the world versus a "soft" view:

"HARD"	"SOFT"
Male	Female
Measurable	Unmeasurable
Reason	Feeling
Analysis	Intuition
Economics	Ethics
Product	Process
Competition	Cooperation
Science	Religion
Elite	Participatory
Specialist	Generalist
Certainty	Uncertainty

All qualities listed have their place in our lives and social relations. The point is that our experience should embody all these qualities, hard and soft. We should employ these qualities simultaneously and in conjunction and, through the contrasts they provide, we can achieve an internal balance. For example, if you experience an intuitive insight (soft), you must test it rigorously through analysis (hard) to determine whether or not the insight is valid.

The women's movement has done the most to bring androgyny out of the closet and onto center stage where it belongs. Now the concept is poised about where ecology was ten years ago. It is ready to take off. Just as ecology gave us a transcendent new view of humanity dwelling in the web of nature, so androgyny gives us a transcendent new view of humanity dwelling in the web of culture. This change in perspective may be politically revolutionary.

I am talking about more than mere institutional responses to a new item on the social agenda. If we "succeed" in the ordinary sense, we might wind up with the passage of a National Androgyny Protection Act, the creation of an Androgyny Protection Agency and the preparation of Androgyny Impact Statements, but surely it is possible to hope for more than this.

We may not inaugurate Heaven on Earth through appreciation and expression of our androgynous gift, but androgyny makes a *somewhat* better society at least conceivable. Paradise is not in the cards, but one can imagine a political system more responsive to ethical and social concerns and less rigidly bureaucratic and obtuse. One can imagine a political system which greets, instead of oppressing, social and technical innovations.

To reach this androgynously-induced *somewhat* better society, it is not necessary to first obliterate the present system with fire and blood. Violence cannot erase the sins of the past, but cultural transformation can preserve the best of the present while granting time and space for new values to grow. But we should not delude ourselves. The trip to the *somewhat* better society will be a painful one in some respects.

As I have noted, androgyny does not mean that men must become more like women; androgyny means that men should express the tenderness and other soft qualities which lie repressed within them. This expression will not come easily for many men. Moreover, androgyny does not mean that women must become more like men; androgyny means that women should express the assertiveness and other hard qualities which lie repressed within them. This expression will not come easily for many women.

So it is with political androgyny. If ethics are to play a larger part in the formulation of public policy, then ethics must be asserted in a tough-minded way. It is not enough to endorse idealism sentimentally and fashionably. Someone has said that while power without morality is blind, morality without power is irrelevant. So, if it is to be worth much, idealism must be tested; perhaps, of all things, idealism *should* be most tested. Like the Good Book says, one must be as cunning as the serpent and as innocent as the dove. This is the best definition of political androgyny I know.

Finally, the idea of androgyny may provide the best tool yet for devolving the giant bureaucracies which have swallowed whole our social institutions. These bureaucracies are out of touch and beyond social control. They are also increasingly stressful to the people who inhabit them; even the technical elites who are supposed to be most rewarded by the prevailing system are frightened, bored and disaffected. Androgyny offers these individuals an honorable way out of this mess if they will but choose it. They can escape and build a new life. Already there are any number of underground railroads helping to transport dropouts from the technical elites to the psychological land of the free, the androgynous nation.

When enough people are liberated, then finally we can get to work on realizing some of the alternative social, economic and technical options we have so long possessed and so little realized. What we must do first is to gently lift our egos off the hooks of sexual stereotypes where they have been stuck since the moment of birth. Until, unless, we do, I honestly believe that nothing can be done about social problems. But if we begin to celebrate our androgyny, then every thing is possible.



*Androgyny: Toward a New Theory of Sexuality*, by June Singer, 1976, \$8.95 from:

Anchor Press/Doubleday  
245 Park Ave.  
New York, NY 10017

Androgyny is a concept that elucidates our experience of ourselves and of others as we realize that each human being is a mixture of widely ranging dispositions, feelings, thoughts, desires, attitudes, motives and behaviors, some of which have come to be labeled "feminine" and others "masculine." June Singer is a Jungian analyst and sees androgyny as an *archetype* that is, "a universal and collective image that has existed (in man's and woman's unconscious) since the remotest times."

Her book is a wonderful journey back into ancient mythology and the beginnings of human experience. Manifestations of the androgyne—the symbolic representation of male and female as one—in early myths and legends of both Western and Eastern cultures are explored, as well as new ways of looking at sexuality.

A sense of the quality of challenge, faith and wisdom found in this book can be gained from the following quote:

"In this new Aquarian Age, people are turning away from the old psychological constructs that are either too ego-centric or too abstract to deal with the human condition that is in danger of losing its sense of humanness. We must look toward a whole new way of being, where we are concerned not so much with the doctoring of symptoms, either in individual or in society, as we are with energetic relationships among people and between people and their global environment. The key to the new consciousness is the capacity to feel oneself in the flow, in process; and to focus on the dynamic interchange of energy that goes on continually in the open system to which we belong. . . . We need to think of ourselves no longer as exclusively "masculine" or exclusively "feminine" but rather as whole beings in whom the opposite qualities are ever present. This is not merely a hypothesis, but an important guiding principle that affects all aspects of living. . . ."

This book is certainly the current graduate course in androgyny. For those who would like to begin at a somewhat more elementary level, Carolyn Heilbrun's *Toward a Recognition of Androgyny*, 1973 (\$3.50 from Harper/Colophon Books, 10 E. 53rd St., NYC, NY 10022), is an excellent choice. I think it is interesting that both of these important new books are by women. Some further investigation revealed that the "big name" in androgyny research is a young Stanford University psychologist, Sandra Bem. Maybe it is not coincidence that in our society, formed and dominated by men in their rigid "masculine" straitjackets, women are the first to perceive the glimmer of a rekindled androgynous ideal. Women are the ones who are now breaking out of old molds and pushing back traditional boundaries in an effort to establish some new sense of themselves. In that endeavor they must certainly come to some better place than to simply trade off their old low-status "femininity" for the old high-status "masculinity."

(Excerpted from a longer review by Glenn Pinder)

Both Byron and Glenn would welcome your reactions and comments on androgyny—send them to 2430 Pennsylvania Ave., N.W., No. 823, Washington, DC 20037.





## On Balance

Androgyny is a much simplified example of a basic principle by which people of many cultures harmonize their lives and societies with the ever-changing flow of the universe. That principle is balance—the seeking or giving of the ingredient most necessary to counter the dominant direction of life at any point—to nudge the ever-swinging pendulum of our personalities or societies from a path of increasing stagnation or decay back towards the center of new and vital life.

The *I Ching* tells us that everything carries within it the seed for its own downfall—at its moment of greatest splendor

its very success is preparing a way for the emergence of a new and balancing force. The greater the dominance of any one thing, the greater becomes the power of its opposite. The dominant force has transformed the world into balance with its own nature, and only a markedly different nature has the power to unbalance and bring change into that world.

This principle of a dynamic flow of balance becomes manifest even in the way people of countries such as Vietnam or China seek their leaders—seeking a person whose personality, whose nature, whose whole being echoes the forces they feel necessary to counter and bring back to balance the forces dominant in their society at that particular time.

Frances Fitzgerald speaks of this in *Fire in the Lake* (\$2.25 from Vintage Books, 201 E. 50th St., New York, NY 10022 (p. 40):

“At the beginning of the first Indochina war Paul Mus asked an old friend of his, a Vietnamese intellectual, whether he supported the Emperor Bao Dai or Ho Chi Minh. “Ho Chi Minh,” said the intellectual. “Ho Chi Minh because he is pointed, whereas Bao Dai is circular like a drop of water. Like water, he will rot everything he touches. What we want is pointed fire and flames like Ho Chi Minh.” As Mus explained, the traditional Vietnamese, like so many peasant people, saw history not as a straight-line progression but as an organic cycle of growth, fruition, and decay; for them these seasonal changes were associated with textures and pictures—the images as old as China itself. In times of prosperity and stability the empire appeared circular—the image of water and fecundity, or a time when, in the words of the great Vietnamese poet, Nguyen Du, “The emperor’s virtues spread like rain over all the land, penetrating deeply into the hearts of men.” Inevitably times would change: rich and secure, the dynasty would isolate itself from the people and grow corrupt—the image of degeneration, the stagnant pool. Then revolution would come—the cleansing fire to burn away the rot of the old order. At such times the Vietnamese would look for a leader who, in his absolute rectitude, his puritanical discipline, would lead the community back to the strength and vigor of its youth. And it was this picture that the Viet Minh and the Viet Cong presented to the Vietnamese of the twentieth century.” —TB

## SOLAR

*Solar Industry Index, 1977, \$8 from:*  
Solar Energy Industry Assn.  
1001 Connecticut Ave., N.W.  
Washington, DC 20036

This new directory, by SEIA, of the solar energy industry contains much good material but has most of the drawbacks of the prototype “ERDA 75” directory published 1-1/2 years ago by ERDA. The new (SEIA) directory gives names, addresses and products of several hundred manufacturers, sales companies and consultants involved in solar heating, windmills, etc. Some of the entries provide useful specifications of products and services.

But the shortcomings of the directory are impressive:

- Only a small fraction of the existing solar-energy companies are listed. For example, only 35 companies the names of which start with “Solar . . .” are listed. Yet this reviewer knows of 150 such companies.

- There is no *inclusive* index or list of companies. If you wish to find out about Solar Such-and-Such Corp., you must first guess which of eight broad categories is applicable—which of eight alphabetical indexes to consult. These are scattered about. They have no clear titles. There are no tabs or finder-flags.

- The subject categories are somewhat arbitrary, vague, overlapping. Many firms are described (somewhat repetitiously) under several categories. Crisp, meaningful categories such as collectors, glazing, storage tanks, instruments, controls, are conspicuous by their absence.

- University groups are omitted. Professional societies are omitted. Nearly all foreign companies are omitted. Ar-

chitects are omitted. Solar home owners are omitted.

- There is no cross index of persons.
- Most of the entries were prepared by the companies themselves and are filled with self-serving claims and, in some instances, highly inflated boasts.
- Some of the glamorous-appearing presentations pertain to companies consisting of little more than two or three men with high hopes and low overhead.

- A 65-page section near the back of the volume is devoted to elementary discussions of solar design principles and solar heating economics. Such tutorial material is out of place in a directory.

Is the directory on the whole valuable? Perhaps, if the reader remembers that many of the companies listed are minuscule and hundreds of important companies have been omitted. The price (\$8) is gratifyingly low. —William A. Shurecliff





The Cosmic Commonplace in the Steady-State

# FIRCH-SNATCHING

The junkman may drive the largest Cadillac in town, but too often we are condescending toward those who are expert at retrieving useful materials, and their own incomes, from our wastes. We fail to recognize and honor the ingenuity involved. And we completely miss the near-cosmic aspects of such work. For, if one of mankind's planetary purposes is to create order from disorder, or low-entropy from high-entropy, as suggested by economics and ecology, then firchers are simply much better at this task of the universe than the rest of us. They minimize entropy.

Most of us buy and throw away the products, the embodied low-entropy, that passes through our bodies or our hands: food, clothing, autos, shelter, tools, records. The path is more

or less linear, from supermarket or department store directly home and then into the garbage can. To the experienced fircher, our consumer behavior is wasteful of materials and, despite the advertised "special discounts," bereft of bargains. Instead he branches into what most Americans feel are either "lower-class," "quaint" or "specialized" acquisition methods, depending on where the materials are available. These modes include 1) trade or barter, often with other firchers, 2) salvage or demolition, as primary contractor and as a subcontractor taking the first's leavings, 3) public auction sales: police, city government, federal agency, 4) garage sales and flea markets, and 5) industrial waste for sale or haul-away.

The highest quality firch, the cosmetic blemish or non-structurally damaged item, is often found in large dumpboxes in industrial areas near our cities, having failed to pass our single standards of quality. Because of the present speeds of manufacturing, hundreds or thousands of items are often produced before the wheels of "progress" can be stopped and the error corrected. Meanwhile, the high-quality spillover to the soft technologist/fircher continues. Often one can get a paid contract to haul it away. Many recycling centers are now gaining added income by formalizing such serendipitous firching with agreements to continuously remove and sell to other industries, collecting fees at both ends. These are called industrial waste exchanges and can be tracked down through your state department of environmental quality. The successful fircher here is often as well-versed on production processes and solvent chemistry as a professional plant manager or chemical engineer, in order to locate wastes still uncontracted, easily re-process them and identify likely buyers. Think it might be hard to get 26 tons of 3-ft. x 4 ft. x 1 ft. granite in all sorts of lovely hues? Try your local tombstone shop after misspelled and upside-down names and designs have been sandblasted on. Most small companies can't afford to buy their own re-surfacing machine or pay transportation costs back to the quarrier or regional distributor. Tombstones make excellent supports for pole buildings. The flat surfaces are ground to 1/1000th of an inch and are excellent for grinding compound work such as re-surfacing auto cylinder heads.

Operable, used and repairable, used items are found at public sales, flea markets and garage sales. Most people are familiar with the new prices of the everyday household items found at garages. With the move to flea markets, however, familiarity with what is antique and what is not, and at what fleas one price or the other is likely to prevail, becomes important. Some cities have one antique-oriented flea with high "collectors' prices" on old tools and one or more fleas at which old



tools go for "functional" prices, usually 1/2 or 2/3 the price of Sears or Wards catalogs. But, in addition to knowing new item prices as a baseline to bargain down from, one must learn how to negotiate. It's fun: Both first offers *never* count. They only establish the boundaries within which the final price will be arrived at. Don't betray your eagerness for either the item or the exciting process of dealing itself; both must ultimately not matter or you must fake it if they do. Learn to go away for an hour and come back later with the same offer when it's near quitting time for the seller. It may be gone, but if not, chances are very good it's yours. At public sales, especially auctions, the expert fircher checks out the price ranges of items in advance and doesn't let "auction fever" lead to winning the bid but losing the bargain. Police, city, county, state and federal surplus sales lists and catalogs come when you get on their mailing lists. For federal agencies, call your local Federal Information Center under "U.S. Gov't." in the white pages, or write your Congressperson or the agency involved for the forms that you fill out to get on the list.

Salvage firching gets us into lumber, window and ornate fireplace recycling. You'll need trucks, tools, fast-working friends and bonding, which is forfeited if everything on the site is not gone at the date specified in the contract. If you are not a recycling center, a group of independent firchers coming together on a particular demolition in exchange for firch also works, but appoint one or two people to represent the group in contract negotiations or the contractor will get nervous. On large jobs, different salvage companies which specialize in removal of various materials may follow one after another, but more likely a sub-contractor is brought in for final clean-up. To get information on raw materials prices such as lumber, metal and glass, watch scrap metal and lumber prices in newspaper want ads, or call up those dealing the wastes you're interested in.

Possibly the most enjoyable part of firching is trading with other firchers. Among neighbors in rural areas who depend on one another in many other ways, firching is a long-term proposition. You're doing a favor that saves a farmer or

rancher friend a long and increasingly expensive trip to town for a costly new part which might even have to be back-ordered weeks or months. No one is likely to forget such help, and it's returned in kind when you need something. In farm country, people know who specializes in what kind of firch or at least is more likely to have what's needed than 20 other farmers. Also, some firchers enjoy collecting it so much they are willing to serve as depots for those who find firch but have no immediate use for it. Of course, such contributors to the collective firch have 1st dibs over those who haven't given lately, somewhat analagous to a blood bank.

Next time we'll cover firch organization and maintenance. Meanwhile, remember the 3rd pig.

—by Lee Johnson, with help from David Katz, Ken Smith & Dexter Bacon

Martin Jopp's battery firch, Princeton, Minn.



## AGRICULTURE · FOOD

*Bio-Dynamic Agriculture: An Introduction*, Herbert H. Koepf, B D. Pettersen and Wolfgang Schaumann, 1976, 429 pp., \$12.00, published by Anthroposophic Press, Spring Valley, New York, and distributed by:

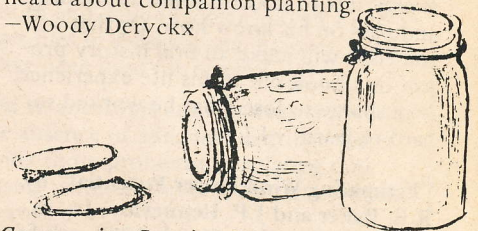
Bio-Dynamic Literature  
P.O. Box 253

Wyoming, Rhode Island 02898

This is the book a lot of people have been waiting for. It is the most readable and complete description of the principles and practices of bio-dynamic farming available in English. The book is a comprehensive text on agriculture from the bio-dynamic perspective; soil science, plant science, and animal husbandry are discussed with an emphasis upon the inter-relatedness, the wholeness, balance and health which are characteristic of the B.D. approach. Bio-dynamic theory, rooted in the original eight lectures of Dr. Rudolf Steiner (1924), is explained, interpreted and related to

actual farming techniques employed by successful bio-dynamic farms in Europe and North America. Results of 50 years of scientific research into aspects of the B.D. approach are also included and explained. Perhaps the most welcome feature of this new book is its detailed description of actual farms under bio-dynamic management. The central philosophy of bio-dynamics regards each farm as a distinct, living entity—an organism—which, while certainly not isolated from the rest of the living earth, has a certain biological integrity and a balanced wholeness of its own. Dr. Koepf's book demonstrates the value of this approach by revealing detailed records of inputs, yields and the internal flow of matter and energy within individual farms. Even the economics of bio-dynamic agriculture is discussed, as is the cooperative quality control and certification program and marketing network among European growers. This is an exciting and revealing book; I recommend it to farmers, to agricultural scientists, to everyone's local library, and especially to all of us who have been trying to understand this exciting yet

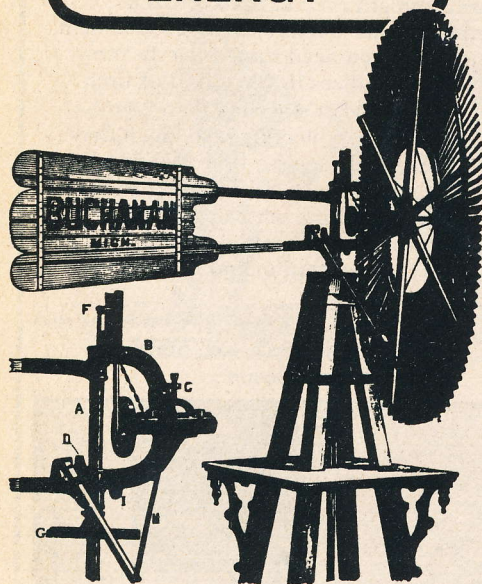
mysterious movement since we first heard about companion planting.  
—Woody Deryckx



*Community Canning Centers*, Stephen Klein, 1977, \$2.50 from:  
Center for Community Economic Development  
639 Massachusetts Avenue, Suite 316  
Cambridge, MA 02139

The recent surge of interest in community canneries has resulted in a growing number of such centers—different ways they can be set up and operated, where to buy equipment and scrounge used machinery, the costs and benefits of community canning, health and insurance regulations, the history of small-scale canning, and the impacts of seasonal operation on efforts to make such centers self-supporting. A valuable guide for any group considering such operations. —TB

## ENERGY



"Martin Answers" by Martin Jopp, in each issue of *Alternative Sources of Energy* magazine, 6 issues/yr. for \$10, from:

A.S.E. Inc.  
Rt. 2, Box 90-A  
Milaca, MN 56353

If you've questions about an old Jacobs you're restoring and connecting up to your home's electrical system, Martin is the man to ask. He's had over 55 years of daily experience with wind-electric systems. His house, farm and workshop are powered by two 3000-watt wind-mills. Send your query, with a self-addressed, 13¢ stamped envelope to him care of A.S.E. I sure hope he has the energy left to take on some apprentices and pass on his know-how. Or that someone will make an oral history project or a book out of his life experience. Be a shame to lose what he worked so hard to learn. —LJ

"Estimating Wind Power Potential" by R.E. Baker and J.P. Hennessey, Jr., in *Power Engineering*, March 1977, ask for March reprint No. 205 from:

Power Engineering  
Technical Publishing Co.  
1301 S. Grove Ave.  
Barrington, IL 60010

Given the impetus of our national energy crisis, wind energy researchers have been trying in recent years to find a "short-cut" method of accurately estimating the available windpower at a site using only the mean wind speed. This article is a state-of-the-art update of that effort, describing the problem, the benefits gained by finding a practical solution and describing the past and present studies on this idea. Baker & Hennessey are part of Oregon State University's wind energy team. —LJ

*ERDA Fuels from Biomass Symposium Proceedings*, April 18-19, 1977, available from:

Ronald G. Sears, Conference Coord.  
Fuels from Biomass  
Univ. of Illinois  
116 Illini Hall  
Champaign, IL 61820

The latest update on various areas of publicly- and privately-funded bioconversion work was provided to the 120 participants. Inquire as to price. —LJ

*Power Plant Performance: Nuclear & Coal Capacity Factors and Economics*, Charles Komanoff, 215 pp., 1976, \$295 to corporations, \$100 to government agencies (a 24-pg. pamphlet of key excerpts is available for \$5; a 6-pg. newsletter summary is \$1), book price to individuals is negotiable. Write:

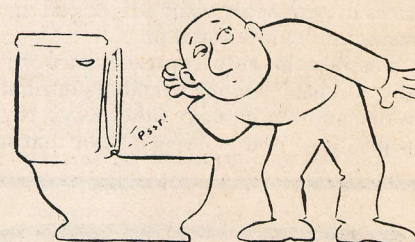
Council on Economic Priorities  
84 Fifth Ave.  
New York, NY 10011

or

250 Columbus Ave.  
San Francisco, CA 94133

Vital to any utility company planning new generation facilities, to state energy offices and public utility commission, this excellent, unbiased research and analysis would be useful as well to citizens' groups and power plant intervenors. It contains, for the first time anywhere, complete year-by-year and lifetime capacity factors of all 51 U.S. nuclear plants; lifetime capacity factors of all 250 coal-fired units and capacity factor average for the 86 utilities operating coal-fired units. Capacity factor trend equations, developed especially for this study, link nuclear and coal capacity factors to explanatory variables: unit size, design, age, installation date, and coal sulfur content. The study also identified factors affecting capacity factor to date and in the future, including air quality and nuclear safety regulation, unit standardization, and increasing unit sizes. It quantifies optimal unit size and design type for nuclear and coal units, based on size effect on capacity factor and capital cost; and compares overall nuclear and coal generating costs, based on capacity factors anticipated for unit sizes planned by U.S. utilities. Highly recommended. —LJ

and John Rhett of the U.S. Environmental Protection Agency to their regional administrators have reversed the agency's past support of centralized municipal sewage systems as a result of their excessive costs. New or renovated septic tanks, holding tanks or package plant treatment system alternatives have generally not been considered carefully even when more cost effective than centralized treatment systems. The EPA now calls for a complete and careful cost analysis of a full range of alternatives and has made septic tanks, holding tanks and package treatment plants serving a cluster of homes eligible for funding. Train remarked, in a December 1976 memorandum, that non-sewered alternatives appear to have been overlooked in part because they are not in the facility planner's ordinary vocabulary of solutions, in part because of failure of septic systems due to improper installation and maintenance, because of possible erroneous decisions by EPA personnel that non-sewered systems are ineligible for grants, and in part because facility plans have generally been based on conservative factors that predict relatively large populations with high water use.



*How to Cut Your Water Use in HALF*, Randall Harrison, 1977, \$2.20 from:

Communication Press  
Box 22541, Sunset Station  
San Francisco, CA 94122

Those strange little cartoon characters that used to come around and respectfully suggest how to cut our energy waste are back—now telling us the cost of our loathsome leakers and the value of toilet training and other actions. A useful little book, with lots of good tight-water tips, how to allocate a 40-gallon per day water ration, fix faucets, dry garden, and the facts of life in Arrakis Americanus. —TB

## SEWAGE

EPA Aboutface on Sewage  
Policy directives issued by Russell Train

Correction:

The current edition of *Septic Tank Practices* by Peter Warshall is \$3 rather than \$2.50 as we have listed it. Available from Peter Warshall, P.O. Box 42, Elm Road, Bolinas, CA 94924.

# COMPOST PRIVY UPDATE

Owner-built compost privies, costing less than \$50 to build, are receiving more and more attention as costs of conventional sewer or septic tank systems become several thousand dollars per house. Compost privies generally rely on some combination of three processes for preventing possible disease problems: 1) "Hot" composting that uses the heat of aerobic composting to kill pathogens and evaporate urine, 2) Biological predators—bugs in normal soil that eat the pathogens, and 3) Hostile environments (cold, ultraviolet, pH, etc.) that starve or kill the pathogens. Retention time—leaving the sewage where nothing can get to it for six months to a year (as in a Clivus or 55-gal. drum privy) forms a combination of the latter two processes. In the absence of thorough health testing of many units, and because of the variability of operating practices, many people use a redundant combination of these processes to ensure safety—often performing a hot compost process on the wastes after they have been isolated for a period of time, and then restricting the use of the compost on food crops, play areas, etc.

Detailed health studies of the first two processes have been made and they seem to operate satisfactorily under most conditions, but treatment by hostile environments lacks comprehensive study. Claims have been made, with various degrees of substantiation, that exposure to the sun, cold and bacteria populations of soil through a winter is adequate treatment in some climates. Adding lime or wood ashes to move the pH above 11.5 (a common privy management process) stops anaerobic digestion and production of odors, and may by itself provide adequate treatment. And just setting the wastes aside in a sealed but vented 55-gallon drum for an extended period has been proposed as the simplest safe way to deal with sewage health problems. Thorough testing on these proposals needs to be carried out.

Initial experience with both commercial and home-built units has revealed a number of common operational problems—the most general being overuse and urine overload. Many of the initial demonstration Clivus installations were made in demonstration houses, schools or research institutes and ended up serving many more people than the single family for which they were designed. Beer parties, campground use, or home installations where little kitchen waste was added to compost and generate heat to evaporate moisture have caused waterlogging and anaerobic action (and smell) in large units and physical overflow in small ones. The small, electrically-heated units have had problems with drying or baking the wastes into brick-hard masses. Exhaust fans in bathrooms with compost toilets have drawn the exhaust from the toilets into the room (solution: put the fan in the toilet vent stack). The vent systems of many models draw from 20 to 40 cubic feet of air per minute out of the house. During heating seasons, that can be a significant heat loss. The main problems, however, continue to be 1) urine, 2) flies, 3) smells and 4) health safety (pathogen destruction).

● Urine is a problem because almost every compost privy is based on aerobic composting, and the moisture in the urine keeps air from the wastes. As a result, many privy builders try to separate as much of the urine as possible from the compost pile. Some, such as the Farallones urban house, install a separate urine toilet (3 gallon flush) connected to a



*Farallones' most recent composting privy, with seat and platform built for squatting or sitting.*

holding tank, which dilutes the urine automatically for application to a garden. Others, such as Ken Kern, let the urine filter through the compost and drain into an anaerobic (septic) tank. Still others (Biopot design) filter the urine through limestone, ashes and charcoal to neutralize it before draining into a soak pit. And some people pee on trees.

● Flies are always a problem to deal with. They can wiggle through *very* small spaces, and it takes extremely careful craftsmanship and periodic monitoring (particularly on large units) to seal access points and keep them sealed. The 55-gallon drum units score high here again because of their solid, strong and simple construction. Vents should be screened with mesh fine enough to exclude fruit flies (available from laboratory supply houses, or use cloth and window screen). Even a perfectly sealed unit will get flies in it during use. Spiders, beetles, and pyrethium spray have been used for control,

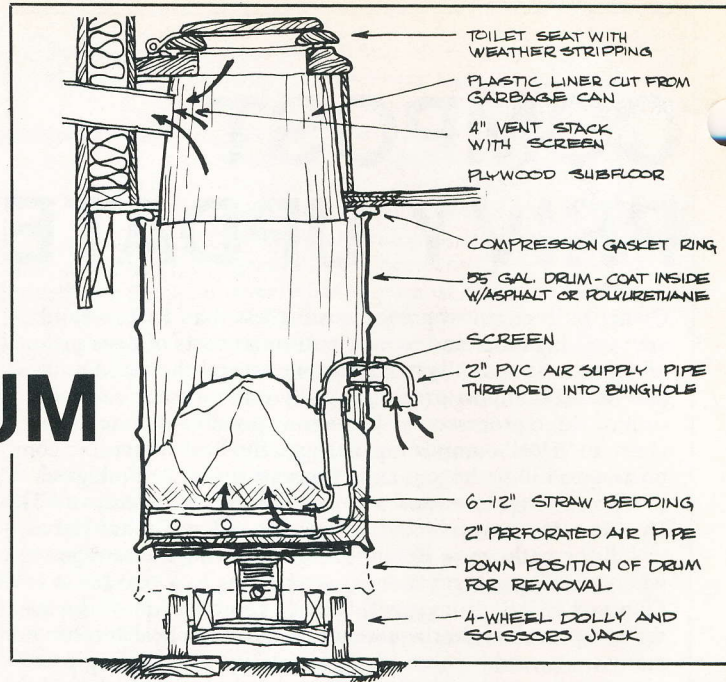
● Odors are usually tied to anaerobic activity caused by urine waterlogging, and to the absence of adequate venting, and is usually solved by resolving those problems (insulating tank, adding garden wastes, using windturbine fans on top of stack, dealing with urine separately).

Addition of cellulose (plant) material is necessary in most situations to provide carbon-nitrogen balance for composting, to maintain a loose enough pile for air to infiltrate easily, and to absorb excess liquids. Most privy-makers now warn against use of sawdust, as it is very difficult to compost, requires a lot of oxygen for its own breakdown, and compacts into the pile. Straw, dirt, garden and kitchen clippings seem to get highest scores from most people.

Legalization of owner-built units still remains a hurdle in most areas. The Oregon legislature is now considering a bill to legalize compost toilets. Drum privies can now be legally constructed in Marin and Mendocino Counties in California. Though commercially-made compost toilets are now legal in a number of states, they almost invariably have not tested or approved owner-built units. A broad testing program to resolve some of the remaining questions of performance and reliability of different designs is needed to make broader legalization possible.

Top scores for owner-built compost privies seem to go to drum privies made from used 55-gallon oil drums. Simple, cheap (under \$50) and strong, they're compact enough to fit under the floor of many existing houses and require minimum handling of the composting material. Alternative use of several drums allows freedom of time of year for garden application or further composting as well as simple storage of composting wastes for any extended period of time desired. These plans are a composite of several of the best schemes we've seen, and though not foolproof give an indication of where the development of such designs stands. Let us know where to go from here. —TB

# 55-GALLON DRUM COMPOSTING PRIVY



## ● CONSTRUCTION:

1. Obtain enough sound 55-gallon drums with removable band and lever type lids to allow for planned sequence of use, storage and composting. The number needed will also depend on amount of straw or sawdust you add, which in turn will depend on humidity, temperature, ventilation and evaporation rate, how much beer you drink, and whether urine is kept separate or not. Paradise Valley folks say one drum serves a family of four for four months. Julian Jewell tells us of three people using only one drum a year. O.A.T. recommends one drum for two people for four months. Others say two drums per person per year. Take your pick! If planning to compost wastes in the drums themselves, allow for 12 months' storage.

2. Coat inside of drums with asphaltic coating or polyurethane to prevent rust.

3. Attach a 2" dia. ABS or PVC air supply pipe through the side bung of the drums. Use perforated pipe across bottom of drum. Install insect screen in the air supply pipe to keep insects out.

4. Determine method of sealing drum to privy floor during use:

- Removable squat plate or seat attached to drum lid so it rests firmly on drum when set into place. Drum sits on 4-wheeled dolly for easy removal.
- Scissors jack on 4-wheel dolly to raise drum tight against compression gasket on underside of floor.

5. Provide a firm, level and smooth surface at the correct height for the drum and dolly to sit on. Make sure drum and dolly clear the floor structure and can be easily removed.

6. Design and build squat plate/seat and exhaust vent structure as desired. All joints should be tight-fitting and caulked or gasketed to keep insects out. The vent stack should be at least 4" in diameter and located at the top of the drum so that when the privy is in use air is pulled down through the toilet seat/squat plate and out the vent, minimizing odors in the room. The privy space should be screened and the door equipped with a closer to minimize fly problems.

## COMPOSTING DRUMS IN PARADISE VALLEY

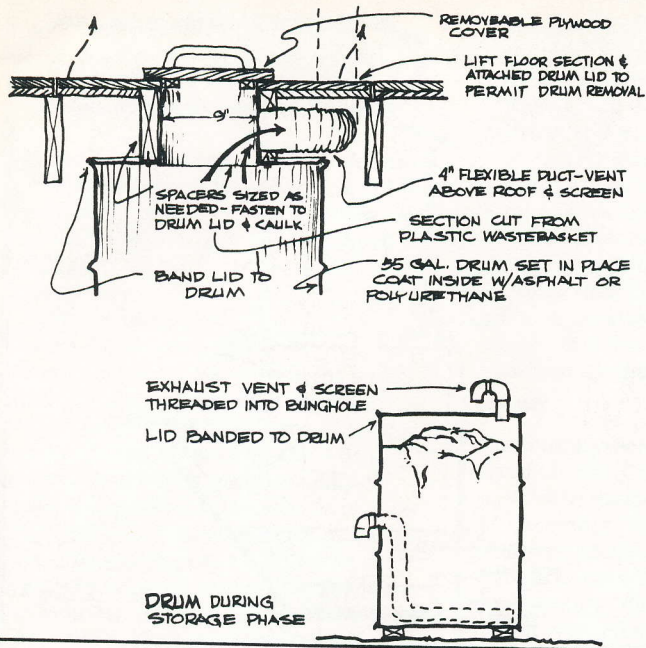
Our experiments using 55-gallon drums as a treatment and storage module for human excreta began in May 1973. Four households are presently employing variations of this system.

Our initial determination to experiment with flushless methods of waste management reflected the belief that the "water closet" was not the best solution to the problem of sewage management in all cases. In our particular situation, there are a number of homes built adjacent to a creek used downstream as a source of domestic water during drought. We were prohibited by the local health department from having septic tank-leachfield systems. For awhile, we used chemical toilets similar to those seen at construction sites and in recreation areas. Although this is a legal application of the 55-gallon drum principle, we found these units to be offensive to the senses, costly to maintain (weekly pumping-out is performed regardless of the intensity of use), wasteful (as aspiring farmers, we considered the fertilizing value in safely composted human manure) and unhealthy (the pump trucks dump into public sewers . . . the high concentration of formaldehyde in these drums can cause kill-off of cleansing bacteria at treatment plants).

At the same time, we admired the drum system's simplicity and low cost, the potential for recycling nutrients back to the soil and the ability to keep all material in containment until its quality has been ascertained.

We set about redesigning the drums to meet our needs. According to World Health Organization data on "compost privies," a storage chamber with a volume of 35 ft. will serve a family of five for four years. By substituting drum specifications into this formula (each 55-gallon barrel contains 7-1/3 ft.) and our family sizes (the largest is five persons), we estimated a minimum compost cycle of ten months.

Early models did not work as well as we hoped. Later, we were able to identify our errors as: not using straw as bedding in the bottom of the drum to start; not venting the drums internally; and not adding enough organic materials with a high C/N ratio, such as sawdust or dry wood chips, after each use. Also, the type of drum employed is the type which is used to ship dangerous chemicals . . . they are lined and have bolt-type clamp-on lids which do not leak or permit the passage of air. We made the mistake of tightly covering the drums for an aging period. The result was an anaerobic sludge which was difficult



#### ● OPERATION:

- \* Six inches or more of loose, dry sawdust or straw should be placed in the bottom of the drum before initial use to absorb moisture.
- \* Two cups of straw, peat moss, etc. should be added to the drum after every use. A supply of such material should be kept next to the seatbox or squatplate. A number of people report difficulties with using sawdust, saying it is hard to compost and tends to matt down in the drum and prevent air circulation. The purpose of adding such materials is to absorb what moisture doesn't evaporate, keep the pile loose so air can circulate, and help balance the carbon/nitrogen ratio for composting.
- \* Kitchen food wastes can be added to the drum as desired, but garbage that has sat around the kitchen accessible to flies may introduce fly eggs into the pile and aggravate insect problems.
- \* Ammonia odors indicate too much moisture from urine—add more straw. Rotten egg odor indicates overcompacted or drowned and anaerobic pile—needs more

to manage for further composting. A full drum weighed about 450 pounds.

Our present system is working very well. Drums are vented both inside and out during use and in subsequent storage. The by-product is a mellow humus with no foul qualities. The drums are started with 12" of sawdust and wood chips in the bottom to absorb liquid wastes. With each use, a one-pound coffee can of sawdust mixed with some wood ashes is added to the drum. Although the addition of this quantity of other organic materials has resulted in a shortening of the anticipated rotation (one drum will serve a family of four for four months), it is an excellent trade-off when it comes time to change drums. They are light enough for two people to move. No handling of the contents is necessary. The drum loads are simply layered into the center of a newly-made compost pile along with other organics: weeds, leaves, kitchen wastes and other animal manures. Although the drums do heat up during use, we feel it is important to introduce the contents of a drum into an additional composting process where thermophilic temperatures are assured. Final disposition of the compost is for fertilizing trees and flowers.

straw, turning, or less urine.

\* Be prepared to deal with inevitable flies, gnats and midges with Baytex from a toilet dealer, Pratt's white fly spray for greenhouses, super-phosphate, ashes, chopped nightshade, potato or tomato foliage, mothballs, or as a last resort—pest strips (other than Shell No-Pest Strips). Check privy periodically for possible entry places for insects and correct conditions as needed.

● URINE: If desired, urine may be collected separately through a urinal, urine toilet, funnel and hose attached to end of squat plate, or drained off from the bottom of the drum, and then diluted 5 to 1 with water for application to tree roots or garden. Most people claim there are no pathogen problems with urine, but we're not absolutely certain—normal precautions of not using on root crops, etc. should probably be followed.

● STORAGE: Install a screened and raincapped vent in one of the bungholes (preferably the larger one) of lids used for filled drums. Replace drums when full, cap with a vented lid, roll vigorously and store. Drums in storage should be rolled monthly. Various options for treatment of the compost are being followed, but not enough testing has occurred yet to determine which treatments/combinations are adequately safe. Options being used or tested are:

- \* Hot composting—placing contents in the center of a large (more than one cubic yard) layered compost pile using additional animal manure, plant materials and water, turning pile every 4th day for 24 days or until cool. Temperature should reach 140°F., and at least 6" of plant materials should cover the pile to keep flies out.
- \* Retention time—store in drums for one year, rolling drums monthly to keep aerated.
- \* Bury.
- \* Truck drums yearly to sewage plant or land application.

#### ● USE OF COMPOST:

- \* Apply and disc a 2- to 4-inch layer as *soil conditioner* for lawn or landscape planting.
- \* Apply 25-250 lbs. per 100 sq. ft. in shallow trenches in the garden at least 6 months to a year before planting crops. Not recommended for root crops.
- \* Use 1- to 2-inch layer for *surface mulch*.
- \* Mix with equal volume of peat and sand or soil for use as *potting mixture* for house plants.

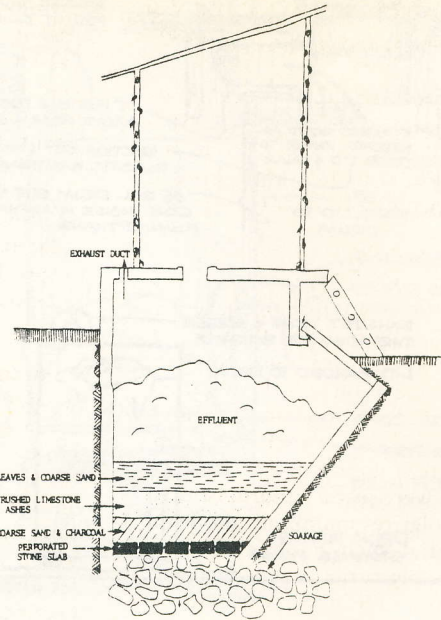
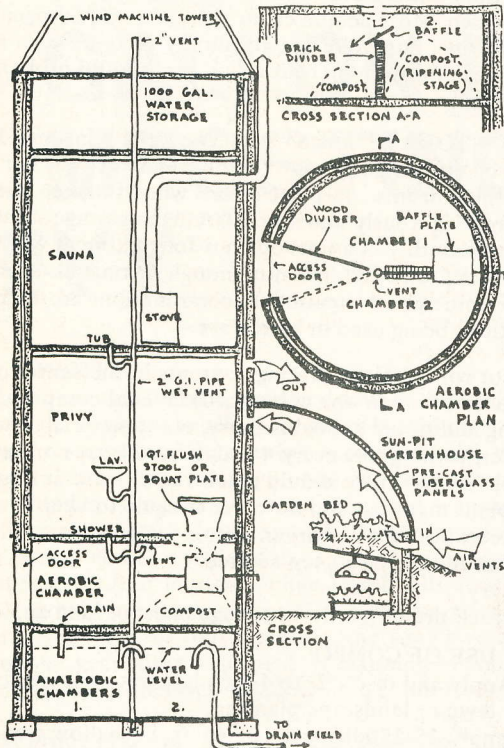
Perseverance with this experimentation has brought us to the brink of our social system's tolerance for deviation from the norm. Both the state and the county are threatening to demolish our homes. Meanwhile, the flush toilet continues to cause irreparable harm to aquatic environments, squanders dwindling supplies of fresh water and places communities in debt for generations in order to finance massive wastewater collection and treatment facilities. In dreams which transcend our own simple wishes, we envision the day when metropolitan areas apply much the same principles to their waste management problems: minimum flush or no-flush toilets; modular units which may be collected and transported in much the same fashion as garbage and trash; and composting stations where the by-products are sold to farmers for fertilizer, the profits from which may be applied to reduce overall costs.

In the Far East, farmers placed their privies adjacent to roads in hopes that passing strangers would take advantage of their convenience and use them. Out here on the frontier, it's a long way between comfort stations.

Paradise Valley  
March 1976

## PRIVY COUNCIL NEWS

Ken Kern's latest compost toilet design is incorporated in a slip-form concrete tower which contains, from bottom to top: 1) a septic tank, 2) aerobic toilet compost bins, 3) a shower, compost toilet and lavatory, 4) a tub and sauna, 5) 1000-gallon water storage, 6) battery storage, and 7) support for a wind-electric generator! Says it's working great! For more information, contact Owner-Builder Access, Box 550, Oakhurst, CA 93644. They also sell one-quart flush toilets and fiberglass squat toilet plates.



The Biopot, developed in Tanzania, uses a disposable alkaline filter of crushed limestone and ashes to filter urine and water that drains through compost pile, neutralizing them and then allowing them to drain into a soakage pit or holding tank, depending on groundwater conditions. Two vaults are used alternatively, with the full one packed with green leaves, sealed and allowed to undergo anaerobic composting. See the February 1977 *Appropriate Technology* for more details.

*The Compost Toilet News*, quarterly, \$4/year from:  
 Alternative Waste Treatment Association  
 Star Route 3,  
 Bath, ME 04530

A new newsletter networking information for people working on development of compost toilets. Case histories, troubleshooting problems with various designs, listing of resources and plans available for builders. The folks who are doing the newsletter, Zandy Clark and Steve Tibbetts, have also put out *Composting Toilets and Greywater Disposal* (\$3) with designs for various kinds of compost toilets, lots of good tips on solar heating, venting, dealing with flies, and a good coverage of greywater principles.

*Simple Living*, \$5 from:  
 Rural Institute  
 225 E. Perkins  
 Ukiah, CA 95482

(See review elsewhere in this issue.) Contains Gib Cooper's construction and operation manual for drum privies. Detailed list of tools and materials needed, an analysis of compost quality from various units, and pointers on building your own.

*United Stand Privy Booklet*, \$2.50 from:  
 United Stand  
 P.O. Box 191  
 Potter Valley, CA 95469

Construction drawings and explanation of several different homemade composting privies and greywater systems for rural applications.

**Farallones Privy** design uses the hot compost method and is the easiest design to expand to handle large numbers of people or to correct overload problems. Expanded capacity requires only construction of additional "ripening" bins. Compost is turned with pitchfork, urine collected in a 5-gallon can, diluted with water and applied to the garden. A revised version of their *Composting Privy Bulletin* is available for \$2 from Farallones Institute, 15290 Coleman Valley Road, Occidental, CA 95465. It contains detailed plans, reports on the testing program at the Rural Center, troubleshooting tips for your privy, public health considerations, etc.

**On-Site Waste Disposal Program**  
 Attn: Wade Rose  
 Office of Appropriate Technology  
 1623 Tenth Street  
 Sacramento, CA 95814

We were planning to do this update on compost privies last month but held it up hoping to get the report on O.A.T.'s six-month study of on-site waste treatment in California. After two months and \$20 in phone bills, we've given up for the moment—the report seems to be snagged in those inevitable political hassles. The report is supposed to have 3 parts—results of the survey of who has built what and how it is working and two papers by Peter Warshall on guidelines for drum privy and greywater systems design. Will let you know if and when we hear more. It's an important program—the only state in the country we know of that's really trying to thoroughly test simple and safe owner-built sewage alternatives. Some information from a preliminary draft of a section of the report are incorporated in the drum privy plans in this issue. —TB

## SOLAR ENERGY

*Applied Solar Energy: An Introduction*, Aden and Marjorie Meinel, 1976, Addison-Wesley Publishing Co., a review by Frances deWinter in *Solar Age*, April 1977, back issues \$2.50 from:

Solar Age  
200 East Main St.  
Port Jervis, NY 12771

There's a time in any movement when older participants feel that their formerly "new" or "weird" idea, like solar energy for the nation and the world, is so well-established, popular and politically accepted that it's safe to be a bit more critical of its promoters. Earlier, when there were just a handful of oft-dismissed solarites mumbling about the sun's potential, such "internal dissension" was easily turned against us and the solar cause. But now, with solar energy an industry and a presidential mandate, with a large and growing national association, it is entirely appropriate to get picky about exaggerations, incorrect basic equations and taking credit for others' earlier, patented inventions.

That's what Mr. deWinter has done in a long, well-crafted and -referenced article with plenty of personal feelings about ethics and values. Be sure to read it if you hoped the Meinels' book would be useful on optics and heat transfer.

Critical reassessments are in the air, it seems. See Bill Shurcliff's review on SEIA's solar directory in this solar section, -LJ

Two excellent, inexpensive items are available from:

CSPI Energy Project  
Center for Science in the Public  
Interest  
1757 S St., N.W.  
Washington, DC 20009

"Solar Economics Revisited," by Alan Okagaki & Ken Bossong, 6 pp., 1977, 40¢ to above address. Through a short series of simple steps, the homeowner thinking about installing a solar water heater can 1) determine how much such a system would cost and 2) compare that cost with electricity, natural gas and oil prices. As a guide, cost comparisons are done for New York, Los Angeles and St. Louis. Highly recommended as the step before you buy a detailed design manual, solar heater D-I-Y plans or a commercial system.

"Solar Commercialization," valuable to all citizens' energy organizations, consumer interest groups, environmental educators, neighborhood associations

and community-city planners, outlines a series of specific program recommendations prepared for ERDA on what ERDA could do to remove existing barriers to solar energy. The 7-pp. memo covers 1) greatly expanded public education, 2) use of Community Block Grant funds and public works programs to build and install solar units, 3) modifications of ERDA's grant-making procedures, and 4) potential for widespread solar applications to meet industrial needs. Free for a stamped, self-addressed envelope to the address above. -LJ

**Community-Scale Soft Energy Info Needed:** The City of Berkeley, Ca., set up an Alternative Energy Commission in December '76 to develop a city-wide energy plan which included soft-technology approaches. The Committee for New Energy, the local lobbying group which worked to have the Commission set up, is now seeking information on community-scale renewable energy options. If you can help, send info to:

Joe Alcamo  
Committee for New Energy  
Berkeley Ecology Center  
2179 Allston Way  
Berkeley, CA 94704



*Solar Outlook*, edited by Steven Davis, weekly, 4 pages per issue, \$67/yr. from: Observer Publishing Co.  
1054-3 1st St., N.W.  
Washington, DC 20007

No other publication reports as much insider's info on trends in solar energy or does so as often. It tries to tell what

the news means, the story behind the headlines and press releases, and that is something no other solar publication does. If you like the wheat sifted from the chaff, you'll enjoy *S.O.* Or get your library to subscribe. -LJ

## INFORMATION

As information networkers we often have the experience of looking through all our various card files for someone's phone number until a bystander innocently suggests trying the phone book. Of course! And often it works. But if it's a married woman you have to know her husband's name (though now that may be changing). If it's a government agency you have to go through the agonies of switchovers and referrals. And if it's only a vague feeling you have that such and such a service is offered somewhere in the city? county? state? federal? government, you're really out of luck.

Yet the phone book *could* be a useful tool—virtually everyone is listed in it, after all. Jim Long has had quite a lot of experience in putting together directories and is beginning to work on the phone companies in Oregon to put together what he is calling the Green Pages to organize and classify service agencies according to problem headings and to generally make the phone book a more useful tool for information and referral. If you would like to keep up with the progress of this effort or would like to know more about his ideas, he'd be glad to respond.

Jim Long  
Washington County Community  
Action Organization  
546 East Baseline Rd.  
Hillsboro, OR 97123  
503/648-6647

*STPP News*, monthly, free from:  
Science, Technology and Public  
Policy Program  
Political Science Dept.  
Purdue University  
West Lafayette, IN 47907

If you're into technology assessment, you'll find this interesting and useful. A recent issue included an article by Denis Hayes; information on projects, programs and conferences across the country; reviews on population, energy, environment, international development; lists of Congressional publications; selected items from periodicals and journals; access to new university reports, book and film reviews; and, last but not least, poetry and cartoons. Prof. Joseph Haberer, the editor, seems not only to know what he's about but to also enjoy it immensely! -LJ



# PASSIVE SOLAR "RULES OF THUMB"

Simplified design "rules of thumb" are finally getting worked out for passive solar design. Ed Mazria at the University of Oregon is working on a handbook for passive solar design. He's put together some of the preliminary conclusions of their computer simulations and tests on actual structures in a paper on Passive Solar Energy Systems:

- \* South-facing glass area equal to one-fifth or one-fourth of the floor area of a building will provide optimum passive solar heating in temperate climates. Cold climates will require one-fourth to one-third the floor area in south
- \* With such window area and proper heat storage within a space, from 50 to 95% of a building's space heating needs during the heating season can be supplied by solar energy.
- \* A ratio of building floor area to storage mass surface area of at least 1:1 is necessary for good system performance.
- \* Wall thickness of more than 8" doesn't contribute to daily thermal storage but can store excess heat for cloudy days.
- \* The surface color of a thermal storage mass plays a key role in the efficiency of a direct gain system. Light colors/large surface areas are necessary to prevent excess surface temperatures if the mass is a floor, and dark colors/small surface areas are necessary when ratio of storage area to floor area is to be minimized.
- \* With use of insulating shutters of major glass areas at night, room temperature fluctuations can be reduced to about 10°F.

In the May 1977 *Bulletin of the New Mexico Solar Energy Association* (\$10/yr. from NMSEA, P.O. Box 2004, Santa Fe, NM 87501), Doug Balcomb gives the following rules of thumb for passive solar heating in northern New Mexico:

- \* Two to three square feet of south-facing double glazing should be used for each BTU/°F-hr. of additional thermal load (exclusive of the glazing). This will give 70 to 80% solar heating for a building kept within a temperature range of 65-70°F.
- \* A thermal storage capacity of at least 30 pounds of water or 150 pounds of masonry or rock should be used for each

square foot of south glass. This storage should be located in the direct sun. If not located in the sun, four times more storage is needed.

- \* Shading of south windows should be used to reduce summer and fall overheating. One effective geometry is a roof overhang which will just shade the top of the window at a noon sun elevation of 45° and will fully shade the window at a noon sun elevation of 78°.
- \* The best thickness of a Trombe wall is in the range of 12 to 16 inches. The masonry should have a high density—at least 100 pounds per cubic foot. Thermocirculation vents can be used to increase daytime heating but will not increase nighttime minimums. Vents should have light-weight passive backdraft dampers or other means to prevent reverse flow at night.

Two new solar publications have been added to the list of those available from the Center for Environmental Research, School of Architecture and Allied Arts, University of Oregon, Eugene, OR 97403:

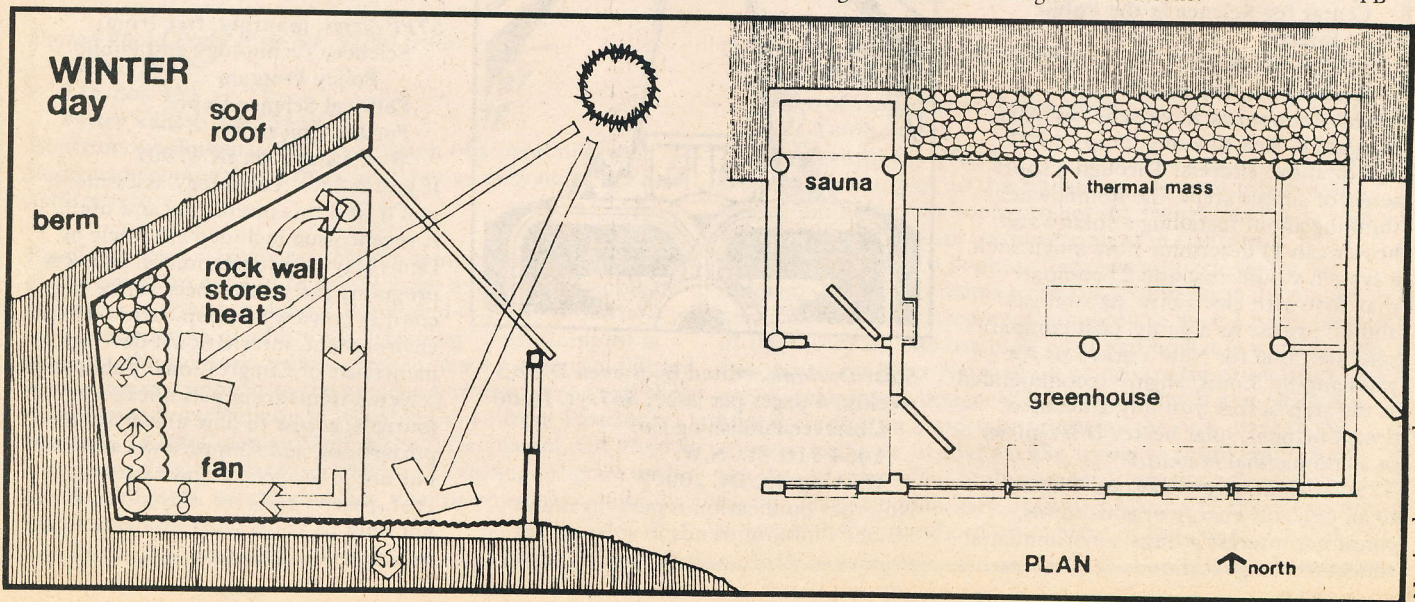
### *Noti Solar Greenhouse Performance and Analysis* (\$2)

A documentation of design and performance of the Noti greenhouse built last spring. Includes greenhouse specifications, solar system description, performance graphs and planting schedules. The greenhouse operated successfully through its first winter with the sun as its only heat source.

### *Predicting the Performance of Passive Solar Heated Buildings* (\$.75)

The performance of "direct gain" passive solar heating systems using various masonry materials and thicknesses was simulated by computer, using an analytical model which most researchers would agree is reasonable. Results, presented graphically, show that best performance (air temperature fluctuations in the space are minimized) occurs when 1) the thermal mass is in the floor and all walls, rather than in just one wall or one-half of a wall, and 2) the thermal mass is either brick with a magnesium additive or water, both highly conductive materials. Future analyses will simulate Trombe walls and solar greenhouse-housing combinations.

—TB



## Solar Greenhouse Update

Seems like, as my salty father would say, "all hell's breaking loose" in the heat- and food-producing greenhouse world. But then it is good weather now, even here in slug land, and food prices from fossil-fueled agribusiness are still moving upwards, pushed by rising energy costs and drought. So it's only natural that a spate of fresh plans, reports and queries should find their way into the RAIN mailbox.

The Noti Solar Greenhouse report is mentioned in this issue's "Passive Solar Design" section. Novel design features include a sauna whose wood heater can also be used to assist in keeping the greenhouse temperatures above freezing and a thermal mass of loose, dark rocks held upright behind reinforcing wire.

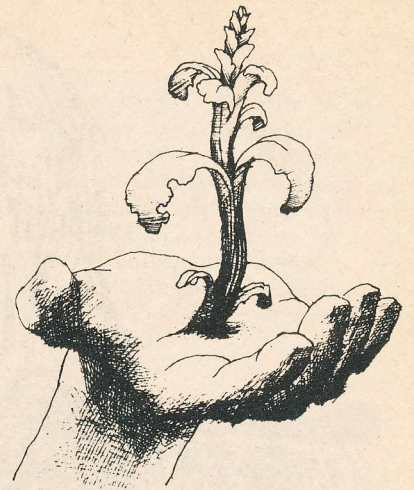
Domestic Technology Institute offers complete plans for its "Solar-Reliant Greenhouse," Series No. 77001-GH, for \$7.50 (or \$8.25 from Environmental Action Reprint Service). It costs about \$1,000 in materials to build and covers 152 sq. ft. in ground area. The five large plan drawings cover all construction details; list the tools, materials and construction procedures; explain how to prepare for planting; where to put various plants; how the greenhouse is designed for various heating and cooling modes; and how to build it as an added source of home heat; and give guidelines for operating it in different regions and seasons. They are excellent except for the fact that reading the text is so difficult that I can't recommend the plans until they're redone much more clearly, with letters and words not packed so close together. If you've poor eyesight, forget it . . . the "m's" and "w's" are murder! DTI's address is Box 2043, Evergreen, CO 80439; EARS's is 2239 E. Colfax, Denver, CO 80206. Malcolm Lillywhite and the crew at DTI also lead excellent workshops at

the Institute and are offering an entire series of solar plans in the near future. Send a stamped, self-addressed envelope for their publications pricelist and workshop dates.

Every so often we get questions about organic hydroponics. If that's something you're into, check out Rick Kasprzak's \$5, 80 pp., book, *The Passive Solar Greenhouse and Organics Hydroponics: A Primer*. It's got 30 pages on greenhouse design and construction; 40 on hydroponics: commercial vs. organic, solutions, results, guides to nutrient mixtures; 3 pages on economics; 4 on 12-volt lighting systems and costs; and 3 on water storage systems. As far as I know it's the first thing on natural hydroponics since Jim deKorne's book. Using parts of it, Rick recently won third prize (\$2,500) in *Mother Earth News'* Food Self-Sufficiency Competition, judged by John Todd, Gil Friend, Helen & Scott Nearing, Howard Odum and David Brower. Order it from R.L.D. publications, Box 1443, Flagstaff, AZ 86002.

While in the Midwest U.S. learning about methane at ERDA's Fuels from Biomass Symposium (see Methane), Ken Smith and I also got a chance to visit Hans, Pam, Ben, Hito and Rusty at Windworks and stayed with John Schade of U. Wisconsin's Access Program in Milwaukee. The garage behind the solar remodeled Access house has an attached greenhouse from which a manual has been produced. It's called *Solar Greenhouse Project Manual* (by Prindiville, McGeen, Buell and Blum), is 14 pages long and costs \$1.40 (10¢ per page) plus 30¢ shipping and handling from Access, Univ. of Wisconsin-Milwaukee, School of Architecture & Urban Planning, Milwaukee, WI 53201. They've a number of other useful publications, so ask for their pricelist.

Recently we got word that Bruce Bugbee and Ken Kern are gathering material for a book to be called *The Owner-Built Greenhouse: Design & Management (A Study of Vegetable Culture in Controlled Environments)*. They plan to include case studies of unique designs and successful horticultural practices as they relate to food production, all with an emphasis on



growing winter vegetables in northern home greenhouses. If you can assist them by testing vegetable varieties bred for optimal growth under low light intensities and low temperatures, by serving as a potential case study of your work, or by sharing your greenhouse failures and successes, please write to Bruce Bugbee, Vegetable Crop Dept., Hunt Hall, Univ. of California, Davis, CA 95616. They'll be touring the U.S. soon and may be able to drop by if you write them fast.

Finally, Woody Deryckx rightfully chastised me for failing to mention that *Two Solar Aquaculture-Greenhouse Systems for Western Washington: A Preliminary Report*, by Becky and Woody Deryckx and Howard Reichmuth, is available for \$2 from Hunter Action Center, Evergreen State College, Olympia, WA 98505. The 51-page document explains a Tilth-Ecotope Group-Bear Creek Thunder joint venture funded by Community Services Admin. Grant No. 00071-T-75/01 through Hunger Action. Two facilities were built at Pragtree Farm near Arlington, Wash., a small rhombicube octahedron and a parabolic north wall greenhouse. They were part of an attempt to 1) determine the feasibility of integrating warm-water aquaculture into greenhouses designed for the Western Washington climate and 2) develop optimally efficient food-raising for use by low-income families and individuals.

That's \$16.20 worth of info to keep you from re-inventing the wheel; cheap if you spend \$500 to \$1000 in materials. However, why not show this to your local librarian and try to get them to order them. Saves you money and gives others access to the publications too.

Well, that's it for now. Let me know if there's other staff to mention and be sure to eye "Passive Solar Design" in this issue for greenhouse applications. —LJ





## A.T. in D.C.

Dear Friends:

While consulting for the National Center for Appropriate Technology for the months of February and March in Washington, DC, I discovered a number of emerging a.t. activities which I thought regional a.t. people would be interested in knowing about and perhaps taking some action on.

The most promising activities and the ones regional a.t. people will have to move fastest on if we wish to have some influence are those related to establishing a.t. or related programs in the Energy Research and Development Agency and the proposed Department of Energy. These activities and possible grassroots initiatives are described below:

- Carter's proposed National Energy Plan provides an excellent opportunity for proposing a strong a.t. program within the new Department of Energy as part of this plan, particularly because Carter seems to be sympathetic to the concept of a.t. (e.g. he had lunch with Schumacher at the White House on March 22). The persons to write to if you wish to support an a.t. program are Alvin Alm, staff director of the Energy Policy and Planning Staff (c/o White House, 1600 Pennsylvania Ave., Washington, DC, 202/456-2896), or David Freeman, a member of the staff thought to be sympathetic to a.t. (alternatively, you could write directly to Carter or his energy advisor, James Schlesinger).
- The F.Y. '77 Authorization for the Energy Research and Development Administration (ERDA) which should be passed shortly calls for a Small Grants Program for A.T., which would provide grants up to \$50,000 (for two years) for small experiments and demonstrations in a.t. ERDA's Division of Building and Community Systems has developed an implementation plan which calls for 70% of the money for this program to be allocated by decentralized regional offices and peer review committees. Sound good? The problem is that because of timing no money was appropriated for the program in F.Y. '77, furthermore the administration's F.Y. '78 budget for ERDA contains no money for a small

grants program. ERDA could, however, "reprogram" funds for a pilot small grant program in F.Y. '77 if enough pressure to do so was generated. Such pressure might be generated by writing directly to Robert Fri, the acting administrator of ERDA (20 Mass. Ave., N.W., Washington, DC 20545) and James Schlesinger (c/o White House) from whom ERDA will take its cues, advocating the reprogramming of, say, \$2-5 million for a small grants program and by writing to key members of Congress arguing the merits of such a program and asking them to write to Fri, Schlesinger and/or Carter. Letters to the Administration or Congress should also argue for significant funding (\$5-10 million) for the program in the F.Y. '78 budget now being reviewed by Congress. For more information on the small grants program, contact Maxine Savitz, Director of Building and Community Systems (20 Mass. Ave., N.W., Washington, DC 20545, 202/376-4646) or Jerry Dwane of that office.

- ERDA's Division of Building and Community Systems also has \$7.5 million to support pilot energy extension services in 10-12 states during F.Y. '77. These services will provide technical information and assistance to small energy consumers primarily on conservation but also on solar and perhaps other a.t.'s. Funding would be administered by the states, which in general will contract with a consortium of existing organizations within the state, which could include a.t. groups, to do the actual outreach. A.T. groups interested in getting involved in this program should contact their State Energy Office and express interest in helping with the proposal from that state. Requests for Proposals (RFPs) will be sent out from ERDA to the states on April 30. The deadline for receiving proposals from the states is June 30, and awards will be announced on August 30. Working on state proposals would provide an excellent opportunity for incorporating a.t. concepts into the program. For further information, contact Maxine Savitz' office (see address above).

Mobilizing support for the above programs could have a big payoff for regional a.t. groups in the future; however, time is short, and to be effective, initiatives must be taken right away. I hope you will be able to get the word out quickly to a.t. people in your region about these opportunities for action.

#### Members of Congress with Interests in AT\* or Related Topics (e.g. Solar)

McIntyre\* (N.H.), Brooke\* (Ma), Hart\* (Colo), Glenn\* (Ohio), Leahy\* (Vt), Culver\* (Iowa), Humphrey\* (Minn), Pell (RI), Heinz (Pa), Kennedy (Ma), Melcher\* (Mont), Javits (NY), Nelson (Wis), Hathaway (Maine), Muskie\* (Maine), Cranston (Calif), Gravel\* (Ark), Baucus\* (Mont), Jeffords\* (Vt), Ottinger\* (NY), Drinan\* (Ma), Richmond\* (NY), Weaver\* (Ore), Harrington\* (Ma), Ambro\* (NY), Bedell\* (Iowa), Pattison (NY), Brademas\* (Ind), Koch (NY), Moakley\* (Ma), Mottl\* (Ohio), Panetta (Calif), Pickle (Tex), Oberstar\* (Minn), McKinney\* (Conn), Rose\* (NC), Dodd (Conn), Roybal (Calif), Runnels (NM), Vanik (Ohio), Long (Md), Chisolm (NY), Mitchell (Md), Roe (NJ), Wylie (Ohio), Roberts (Tex), Lehman (Fla), Clausen (Calif), Yates (Ill), Spellman (Md), Steers (Md), Patterson\* (Calif), Anderson (Calif), O'Brien (Ill).

Some additional federal agency activities related to a.t. which regional groups might wish to get involved with, most of which have a longer time frame, are listed below:

- The *National Science Foundation* funded Eugene Eccli, Cecil Cook and Ann Becker to do a survey of a.t. activities in the U.S., identifying institutional barriers and possible remedies. As part of this study, a directory is being prepared of about 300 a.t.-related groups across the country. The Office of Exploratory Research and Problem Assessment which funded the project is now planning to hold a conference on a.t. For further information, contact Lynn Preston, Office of Exploratory Research (NSF, 1800 G St., N.W., Washington, DC 20550, 202/634-7181), or Eugene Eccli, Design Alternatives, Inc. (1312 18th St., N.W., Washington, DC 20036, 202/223-6336).
- The *Department of Housing and Urban Development* is distributing \$10 million in 10 states with high electric rates to provide \$400 grants to homeowners to install solar hot water heaters. Massachusetts, for example, will have 1375 such grants to give out. For information, contact David Moore, Chief of Solar Heating and Cooling Demonstrations, HUD (451 Seventh St., S.W., Washington, DC 20410, 202/755-5561).
- The *Economic Development Administration (EDA)* in the Commerce Department will probably shortly be authorized to fund new *public works projects* in Wyoming, No. Dakota, So. Dakota and DC, and perhaps in other localities which haven't previously applied for public works money (the bill is in conference now). A.T. projects such as community greenhouses and community alternative energy utilities could fall under this program. EDA may also get authorization for a *Drought Relief Program*, which could fund local agencies and nonprofit companies to do water conservation and recycling projects. Also, an EDA energy task force is considering proposing a *loan program for alternative sources of energy*. For information contact Anne Berlinger, EDA (Department of Commerce, 14th St. between Constitution and E., N.W., Washington, DC 20230, 202/377-2162).

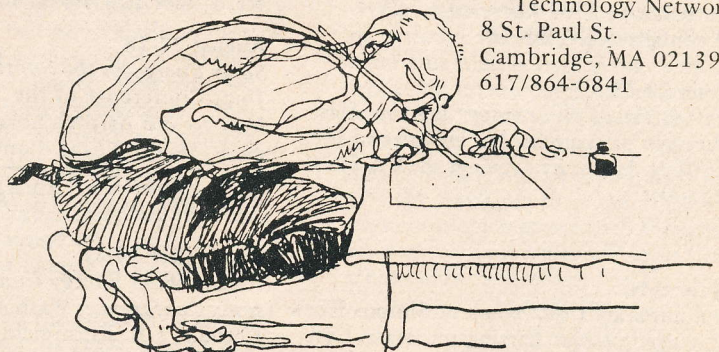
- *A.T. International (ATI)*, a nonprofit corporation created to develop a.t.'s in developing countries, will shortly get its first million dollars from the Agency for International Development (AID) in the State Department. ATI is expected to have an operating budget of around \$10 million a year, most of which will go for a.t. research in developing countries, but some of which may go to U.S. a.t. groups. For information contact Ted Owens, Division of Technical Assistance, AID (320 21st St., N.W., Washington, DC 20523, 202/632-2944, or Kristin Shannon, Vice Chairman of the ATI Board, c/o Owens (202/387-5700).

- The new heads of the *Environmental Protection Agency* and the *Council on Environmental Quality*, Douglas Costle and Charles Warren, seem to be sympathetic to a.t., so now might be a good time to apply to EPA for grants related to a.t., such as sewerless toilet systems, recycling solid waste, and biological pest control. Contacts include Peggy Hansen in the Resource Recovery Division, Office of Solid Waste (EPA, 401 M St., S.W., Washington, DC 20460), Bob Bastian in the Office of Water Program Operations (202/426-8976), and Bill Holmberg in the Office of Pesticide Programs (202/755-8297).

As the above descriptions indicate, a lot of activities related to a.t. are just starting to emerge on the federal level, and it is important that the a.t. community have ways of getting information on these activities and influencing their early evolution. I'm afraid, however, there isn't an adequate channel at present to get such information out to the grassroots a.t. people and to make their views felt in Washington. Hopefully, NCAT will provide some of this capability once it gets geared up. It may also be useful to begin to evolve a national federation for a.t. made up of regional a.t. groups, which, among other things, would get information out to the grassroots on what is happening in Washington related to a.t. and would give the regional groups some clout in D.C. Such an idea was proposed two years ago by the folks at RAIN Magazine. Perhaps it is an idea whose time has come. I've discussed the concept with a number of regional a.t. people (at the AAAS meeting in Denver in February and during Schumacher's visit to Washington in March) and so far everyone likes the idea although some are skeptical about how such a federation would support itself. What do you think?

Write and let me know. I'll probably be writing more on this later.

Peace,  
Craig Decker  
New England Appropriate  
Technology Network  
8 St. Paul St.  
Cambridge, MA 02139  
617/864-6841



- For more details on many of the above programs, contact Craig Decker at the above address.



# Rush

For the wanderers among you: *Historic Country Inns of California*, by Jim Crain, 1977, \$4.95 from Chronicle Books, 870 Market Street, San Francisco, CA 94102.

You Can Can With Honey by Nancy Casper, available for \$1.50 from her at 91522 House Creek Rd., McKenzie Bridge, OR 97401. Recipes, hints and encouragements for the use of honey in canning. Let's begin to get away from all that sugar.

*Environmental Action Magazine* has printed in the April 9, 1977, issue an excellent listing of "where to write" in Washington, D.C., on environmental and energy issues. The annotated list includes lobbying and public interest groups, government agencies and congressional committees. The magazine can be had bi-weekly for \$15 a year from Suite 731, 1346 Connecticut Ave., N.W., Washington, DC 20036.

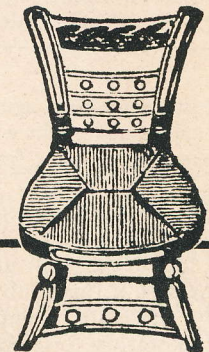
Responsible Agriculture Internships in New England. We got wind of this too late for this summer's application deadlines but we thought we'd tell you about it in case they do it again. There are week-long orientation and concluding seminars on concepts of regional self-sufficiency and community organizing around a summer internship with groups ranging from small farms to urban co-ops. Undergraduates who live and/or reside in New England or Metropolitan New York are eligible. Sounds like a super way to structure a work/study program. Sponsored by Oxfam-America (302 Columbus Ave., Boston, MA 02116) and The Action Center (1028 Connecticut Ave., N.W., Washington, DC 20036).

Works by Oregon, Washington, B.C., Alaska, Idaho and Montana artists are now being accepted for the *Fifth Annual*

*Northwest Film and Video Festival*. \$1,000 is being offered in prizes. Deadline for entries is July 29. Showings are August 1-3 and August 10-14. Write for details to the Northwest Film Study Center, Portland Art Museum, S.W. Park & Madison, Portland, OR 97205.

*Center for Science in the Public Interest* has a comprehensive listing of more than 3,000 people working on renewable energy. We haven't seen it yet. The Local Energy Action Program (LEAP) Directory Mailing List costs \$25 for profit-making organizations and \$15 for non-profit, citizen action groups. CSPI, 1757 S Street, N.W., Washington, DC 20009.

Factory outlets are always good places to get bargains, and New England is loaded with small factories in all sorts of out-of-the-way places. The 3rd edition of the *Factory Store Guide to All New England* by A. Miser and A. Penny-pincher will lead you to them. \$3 from the Pequot Press, Chester, CT 06412.



## CALENDAR

### June 6-10

*A Solar World (ISES American Section) Annual Meeting*, Orlando, Florida. Contact Div. of Continuing Education, Florida Technological University, Box 25000, Orlando, FL 32816.

### June 13-15

*Railroad Electrification Conference*, Washington, D.C. Contact Transportation Research Board, National Academy of Sciences, 2101 Constitution Ave., Washington, DC 20418.

### June 20-23

*ERDA Fuel Cell Seminar*, Boston, Mass. Contact V. Hannon, Jr., Dynatrend Inc., 1901 N. Morre St., Arlington, VA 2220 22209.

### July 8-10

*Food Policy Conference* at Simons Rock College in Great Barrington, Mass. Contact Center for Farm and Food Research, Box 166, Cornwall Bridge, CT 06754. Cost is \$82 (double) or \$77 (single).

### July 25-29

*International Solar Building Technology Conference*, London, England. Contact Secretariat, Int'l. Solar Bldg. Conf., North East London Polytechnic, Forest Road, London, E17 4JB.

### August 12-20

*Shelter Conference* at the Heathcote Center. Emphasis is on low-cost, energy efficient shelter. Cost is \$30 for the weekend. Contact Heathcote Center, Rt. 1, Box 129, Freeland, MD 21053.

### August 27-28

*Solar Energy in the Southwest '77*: First Joint Conference of the Texas, New Mexico and Arizona Solar Energy Society, Dallas, Texas. Contact Texas Solar Energy Society, 7703 N. Lamar, Suite 500, Austin, TX 78572.

### September 19-22

*ERDA Wind Energy Conversion Systems Conference*, Washington, DC. Contact T.R. Kornreich, Conference Coordinator, JBF Scientific Corp., 1701 K St., N.W., Suite 905, Washington, DC 20006.

### Summer 1977

*High Valley Summer Program* of useful weekend courses: July 9-10, Body, Planet, Cost Conscious Cooking; July 17-18, How to Get Started with Bees, Goats and Poultry; July 30-31, Planning for Good Use of the Land; Aug. 6-7, Energy Design Package; Aug. 20-21, Spinning and Dyeing. Cost per weekend is \$35. Contact High Valley, M.P. 154, Smith Cripe Road, Washougal, WA 98671, 206/837-3298.

### Summer 1977

*Eco-Lifeways*: Communal living, organic gardening, food preservation, alternative energy, carpentry, natural cooking, soils, simple repairs. June 17-July 1, organized with a Walden II type government; July 2-15, organized with a consensus type government; July 16-29, organized with a strong leader type government. Cost is \$45 per session or \$100 for all three. Contact School of Country Living, P.O. Box 3233, York, PA 17402, 717/755-1561.

# JUNGLE DRUMS

## THE VOID-SNATCHERS

*Just bumped into another one of those little traps we set up for ourselves—we talk and write about the things we know about, and silently step around those voids we don't know. And no one else thinks about them because we're so busy thinking and talking about what we know about. Those voids are real important, though—all RAIN is a lot of people's old voids that some one of us have snuck up on and peeked into. Send us some new voids—what important things aren't we covering? What do you really want to know about but are afraid to ask? What does your stomach say should be happening which everything else says is impossible? We won't promise any answers. We'll print some of your questions—and somewhere out there someone of you will already have tiptoed up and peeked into that void because no one remembered to tell you to step quietly past. —TB*

Dear Lane:

Thank you so much for the excellent article on earthworms; thought Steven did a super job. The review of our book *Earthworms for Ecology and Profit* was also greatly appreciated.

Just wanted to correct you on two other titles mentioned, *Biology of Earthworms* and *Harnessing the Earthworm*, which are now published by Bookworm. Have enclosed our catalog for your information.

We have a "Year of the Worm" Bookstore Window Display Contest now in progress to introduce our two new titles to the public. \$500 will be awarded in prize money for the most creative BOOKWORM display and free earthworm T-shirts will be available with book orders. So far the response has been very rewarding. There is a vast audience still seeking earthworm information and sales have been overwhelming.

Sincerely,  
Maisie C. Meier  
Director of Sales Prom.  
Bookworm Publishing  
P.O. Box 655  
Ontario, CA 91761

Dear RAIN:

We currently have a half-time editor position open at the Northern Rockies Action Group. We are looking for someone with skills and experience in both editing and layout for a 16-page magazine. An understanding of graphic design and production principles is required, as well as an ability to write and edit quality material. A more complete job description and examples of our magazine, the *NRAG Papers*, is available to anyone interested by contacting me.

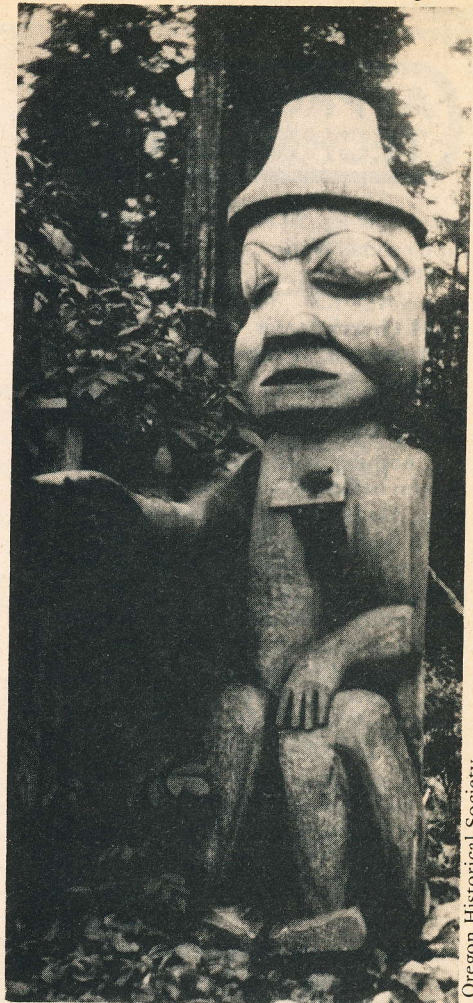
Thank you for your time.

Sincerely,  
Laurie A. Lamson  
Communications Coord.  
Northern Rockies Action  
Group  
9 Placer Street  
Helena, MT 59601  
406/442-6615

Dear RAIN:

At your suggestion, I got, through the library, *Forest Farming* by Sholto-Douglas. I share your enthusiasm for the idea; I dismay at the wretched quality of the book. Poorly organized, redundant, and very little new. Smith recycled. My specific pique is directed at the absence of useful references. For example, for the honey locust he mentions an experiment station in Hayes, Kansas. No name, no useful address, no listed publication. I write you to ask if you know anyone doing any aspect of forest farming in the northwest. I recently planted about 30 filberts from Dundee, but that is hardly noteworthy in this area. Am particularly interested in the honey locust, since it appears suited to this climate. Moreover, we have a huge locust growing on "the land" already. Probably not a honey but thriving and perhaps indicative of general suitability. Where might I get stock? What other trees might survive here? Persimmon? What of Pau-Pau (?) Are acorns of Oregon oaks used for flour?

Who knows the answers to any of this? I've tried the DNR (state forestry in Washington), but of course their routine response is "plant Douglas fir"—after spraying to kill nitrogen-



Oregon Historical Society

fixing alder and then spraying with nitrogen!

I hope to do a bit of investigating on potentials for energy from wood waste in Northwest—The Northwest Energy Policy Project had some rather startling data on potentials and costs. One primary concern I have is the effect on forest productivity. Do you know anyone well informed on this?

Sincerely,  
Jerry Parker  
Rt. 3, Box 492  
Port Angeles, WA 98362

Dear Tom:

Can you or any RAIN readers supply us with any resources on rural road repair? Our road is a steep hill, and runoff from rain makes deep gullies out of the wheel tracks. What we have been doing is filling up the gullies with sledged rock and making water bars with trees to divert the water off the road. We don't have money for gravel. Are there any alternatives you know of? Does this seem likely to work?

Sincerely,  
David Schumer  
Rt. 2, Box 96C  
Leslie, AR 72645

—Any ideas, RAINpeople?

## APPROPRIATE TECHNOLOGY

In the Making, \$4 for directory and supplements from:

ITM

c/o ACORN

84 Church Street

Wolverton, Milton Keynes

Bucks, England

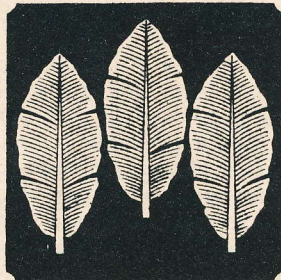
After reading the Compendium catalog (RAIN, May 1977), I had the impression that nothing much was coming out of Britain besides Schumacher, *Undercurrents*, Doris Lessing and Ian Hogan. Everything else in the catalog was American. This little Directory of Co-operative Projects gives me a new image. The listing of manufacturers, shops and organizations is divided into urban, rural, radical technology and information. There are also some essays on co-ops, urban vs. rural, and the British version of CETA, called Job Creation Program. A lot of it is familiar sounding, parts like the industrial co-ops sound like they might be ahead of us—maybe they're just being pushed to the limit sooner. —LdeM

National Center for Appropriate Technology  
P.O. Box 3838  
Butte, MT 59701  
406/723-6533

The word we hear from NCAT is that they have not been getting many outstanding proposals. Where are all of us who were complaining about there not ever being any money available? The majority of the things they have been seeing are either too academic or projects that have been tested at length already. The staff is now able to fund small amounts up to \$1500 immediately without much of a formal proposal. Grants up to \$10,000 need NCAT Board approval while anything above that must go all the way back to the Community Services Administration. So keep 'em small, folks, but get those proposals in there! Give them a call first or write a general letter to sound out an idea first if you want. But the money is there, and the NCAT staff seems to know good ideas when they see them.

If you're interested in really taking the bull by the horns, there are a number of job openings at the center. The money is good (almost too good to our way of thinking) and the descriptions all sound intriguing. Write for a set of them. The regular NCAT staff has positions available for Technology Researcher/Writer, Policy Researcher/Writer, Supervisor of Field Operations, Publications Editor, Conference/Workshop Organizer, and Research Analyst. The Technical Research Staff needs an Economist, a Life Scientist/Biologist, a Mechanical Engineer and Senior Engineer. Then there are several openings for regional Field Organizers to do outreach work "matching up technology developers and potential low-income users of the technology within the region." So step right up, folks. It'll take good people to get good things going.

A final—an important—message to relay: NCAT would like to fund the establishment of regional a.t. newsletters or support the inclusion of a.t./low-income material in existing publications. They have about \$10,000 allocated for each of 10 regions. At the moment both the definition of the regions and the amounts are pretty flexible, i.e. several groups might get smaller amounts for smaller areas. Groups will be expected to match NCAT support. Write them immediately for a more complete program announcement. They'd like to get these things rolling soon. —LdeM



*Conservor Society News*, that excellent Canadian a.t. newsletter full of "living lightly" tidbits, has moved to Prince Edward Island. For a sample copy, send \$1 to:

Conservor Society News  
RR No. 4  
Hunter River  
P.E.I. C0A 1N0  
Canada

## RAIN DROPS

Things have been pretty quiet around here this month. We're mostly concentrating on getting things ship-shape, balanced by a few relaxed brainstorming sessions about what to do next to keep our hands in. Just doing the magazine, reporting solely on other people's projects, isn't as fun as having some "real" stuff happening ourselves. We'll let you know as our ideas progress.

Several people, both some new to RAIN and some old friends, have asked about purchasing *RAINbook* as compared to back issues. Here's the deal: *RAINbook* includes most of the entries up to and including our February/March 1977 issue (Vol. III, No. 5). They're indexed and grouped into logical categories (also cross-referenced), so it's much handier if you're looking for a particular group's address or wanting a good reference for a solar hot water heater than hunting through old RAINs. What goes in each time is pretty much what crosses our desks that month, and *RAINbook* pretty much sums up the state of the art. What it *doesn't* have is the articles and thought pieces. We wanted to include them but just didn't have room. So, for instance, if you want to read the Schumacher essays written since *Small Is Beautiful* (not available anywhere else in the U.S.), you'll have to go to back issues. To help you keep track of things, we're now working on an index of the first three volumes and *RAINbook*, which will tell you (and remind us) where we mentioned what. We'll let you know when that gets finished—presumably at the end of the summer when we finish with Vol. III, No. 10.

We've been getting an increasing number of notes from people who haven't gotten their RAIN because some friend (?) or co-worker or neighbor swiped it. If you swiped this issue from someone, why don't you subscribe yourself? Your friends will be happier and we will be too. If you have problems with friends borrowing all your new copies of RAIN, suggest they subscribe (or subscribe for them). There's a subscription form on Page 23.

Don't forget to let us know your new address before you move (if at all possible) and renew promptly (you'll get a notice and your last issue will be stamped "Renew now! This is your last issue."). Any issues you miss will have to be ordered separately at \$1 each.

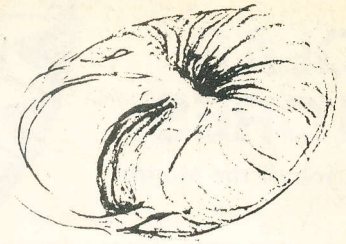
That's all for now. What's happening with you this summer that RAIN readers and the appropriate technology network would like to know about? Keep in touch. —LdeM

RAIN's office is at 2270 N.W. Irving, Portland, OR 97210. Ph: (503) 227-5110.

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	Emelyn Rohlffs	Bill Rohlffs	

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# RAIN PUBLICATIONS



**RAINBOOK: Resources for Appropriate Technology**, 256 pp., April 1977, \$7.95. Resources for changing our dreams and communities. Compilation of the best of RAIN through Spring 1977, with much new material on economics, communications, health, energy, community building and other areas. Fully indexed. Note: **RAINBOOK** incorporates **A.T. Sourcelists, Coming Around**, and most back issues listed below.

**Ecotopia Poster**, by Diane Schatz, 2'x3', \$3. A reprint of the "Visions of Ecotopia" line drawing that appeared in the April '76 poster issue. Great for coloring.

**A.T. Sourcelists, August 1976, 50¢ each, any 6 for \$2.** Two to five pages each, prepared by RAIN for the California Office of Appropriate Technology:

- Direct Solar Heating/Cooling**
- Energy Conserving Landscaping**
- Wind Energy**
- Solid Waste Utilization**
- Drying Up the Toilets**
- Diseconomies of Scale**
- Bioconversion: Methane Production**
- Weatherizing: Home Insulation**
- Costs of Urban Growth**
- Natural Pest Control**
- Appropriate Technology**
- Low-Cost Construction**

**Employment Impact Statement, October 1976, 2 pp., 50¢.** A simple, step-by-step way to figure the employment impacts of a new industry and consider the benefits of different options.

**Woodstoves, Rainpaper No. 1, November 1976, \$1.** Compiled reprints from articles by Bill Day on selection, maintenance and repair of woodstoves of all kinds. Bill is a third-generation repairer of woodstoves in Portland, Oregon.

**Sharing Smaller Pies, by Tom Bender, January 1975, 38 pp., \$2.** Discussion of the need for institutional change tied in with energy and economic realities. Begins to lay out new operating principles, including some criteria for appropriate technology.

**Environmental Design Primer, by Tom Bender, 206 pp., 1973, \$5.** Meditations on an ecological consciousness. Essays about moving our heads and spaces into the right places.

**Living Lightly: Energy Conservation in Housing, by Tom Bender, 38 pp., 1973, \$2.** Early ideas on the need for change in building and lifestyle; compost privies, Ouroboros Project (self-sufficient experimental house in Minnesota) and the "problem of bricks in your toilet."

**Coming Around: An Introductory Sourcelist on Appropriate Technology, prepared by Lane deMoll, 12 pp., revised edition, September 1976, \$1.** A general listing including general theory, economics and energetics, community, manufacturing, tools and hardware, financial institutions, agriculture, health care, shelter, transportation, self-reliance and energy. Does not include how-to publications but directs you to them.

**Back Issues Available, \$1 each.** Circle those desired: Vol. I, Nos. 7, 8, 9; Vol. II, Nos. 1, 2, 3, 4, 5, 6, 7/8, 9, 10; Vol. III, Nos. 1, 2, 3, 4, 5, 6. (Vol. II, No. 6 was a poster issue; Vol. II, No. 9 was a special issue on Northwest Habitat.)

## SUBSCRIBE!

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# SOLAR STORES:

## A.T. Job of the Month

We were planning to feature solar stores as this month's Job of the Month, then saw that Helene Kassler, the new "Sunspot" editor for Not Man Apart had done a good listing of solar stores in last month's issue, so asked if we could reprint it. Sunspot is a very useful, information-packed addition to the always excellent NMA. Subscriptions are \$10/yr. (twice monthly) from Friends of the Earth, 124 Spear Street, San Francisco, CA 94105.

Shoppers can find the closest thing to an alternative energy supermarket in Santa Cruz, California, at Solar Access, 320-1 Cedar Street. They have a variety of products to choose from: books, complete solar systems, components, conservation devices (energy and water), and do-it-yourself plans.

But Solar Access is not only a place for buying; it is a place for seeing the alternatives at work—many of the products are used in the store. The building is solar heated with a south-facing glass door, an attached greenhouse and several insulating products to collect, store and circulate solar energy.

On the East Coast, sun shopping leads you to The Sky Is Falling in Washington, DC. This store offers books, appliances, systems, components—just about all you need. It has everything for do-it-yourselfers, or the people there will do it for you. Check them out at 1200 9th Street, N.W., Washington, DC.

There are many other solar stores that sell a variety of products—one or several manufacturers' goods. The following stores offer three or more brands of equipment. Sun Store, 427 Wade



Hampton Boulevard, Greenville, South Carolina 29609 (803) 242-1902; Mountain Mechanical Inc., 5270 Broadway, Denver, Colorado 80216, (303) 534-3000; Benz Enterprises, 7105 Panorama Drive, Rockville, Maryland 20855, (301) 948-8920.

If you live too far from a solar store, you might follow the example of Jet Propulsion Laboratory (JPL) employees, who formed their own Alternate Consumer Energy Society (ACES). By joining together and making bulk purchases from distributors and manufacturers, they receive hefty discounts on products like solar panels, insulation, etc.

Although many of their members work at JPL (part of California Institute of Technology in Pasadena), ACES is open to the public for a very small membership fee.

In addition, ACES arranged for Cal Tech's credit union to offer low-interest loans for solar equipment. If you are interested in more information about ACES, contact Gilbert Herrera at Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91103, (213) 354-2781.

And if none of the aforementioned shopping ideas suit you, there is even a solar mail-in catalog. Just send \$2.00 to SUN (Solar Usage Now), Box 306, 450 E. Tiffin Street, Bascom, OH 44809, for their 1977 catalog with more than 100 solar and conservation devices—and a 24-page description and explanation of solar heating to boot!

Not only does SUN offer the usual products (systems, components, kits, insulation), but they also sell the wild and wacky—solar cigarette lighters, a solar watch, and a sun blanket for a glorious tan all year 'round.

This list does not even attempt to cover the hundreds of manufacturers and distributors who sell their own products directly to you. For a list of those near you, try the toll-free National Solar Heating and Cooling Information Center (800) 523-2929, or in Pennsylvania, (800) 462-4983. Whatever you want in a solar product, it probably can be found somewhere among the solar shopping options.



Many of the above stores might help you on a consulting basis to set up a store in your community. The *SUN Catalog* (above); *Spectrum*, Alternative Sources of Energy's equipment catalog (\$2 from ASE, Route 2, Box 90-A, Milaca, MN 56353); ERDA's *Catalog of Solar Energy Heating and Cooling Products*, free from ERDA Technical Information Center, P.O. Box 62, Oak Ridge, TN 37830; the *Solar Energy Index*, \$8 from the Solar Energy Industries Association, 1001 Connecticut Avenue, N.W., Washington, DC 20036 (see review this issue); and various solar periodicals such as *Solar Engineering Magazine* (free to "professionals"), 8435 Stemmons Freeway, Suite 880, Dallas, TX 75247, can connect you up with manufacturers and equipment suppliers. In the Northwest, a new solar store, SYNERGY, is opening (Rt. 1, Box 773P, Salem, OR 97304) and will have a mail order catalog available soon.

In addition to equipment, you'll need someone who can evaluate and design for individual situations and someone who can install the systems competently. The solar stores we know about are going great guns and doing a lot to share how to live lightly as well as selling solar hardware. —TB



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